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DEVELOPMENT OF A MODEL AND ITS USE IN AIDING THE
FURTHER IMPLEMENTATION OF CRIB PROJECT

by



ALAN GIFFARD RYAN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH
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THE UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Development of a Model and its Use in Aiding the Further Implementation of CRIB Project submitted by A.G.Ryan in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

To

Carol, who missed out last time;

Susan, who wasn't there last time;

Edda, who, thank goodness, was there all the time.

ABSTRACT

In this study it was required to assess the level of implementation of the role descriptions of personnel involved with a curriculum innovation; the Curriculum Resources Information Bank (CRIB) Project. The strategy which was designed for the assessment consisted of developing a standard against which the current level of role description implementation could be measured. The standard was called the Idealized Model since it was a model of an ideal: a CRIB Project which had been fully-implemented according to all its objectives. The Idealized Model was reacted to by members of Edmonton Public School Board (EPSB) system who had been involved with the development and implementation of CRIB Project; their comments were incorporated into the model to yield the Revised Idealized Model. The perceived current level of implementation of the role descriptions set out in the Revised Idealized Model was assessed by questionnaire survey and was compared with the idealized role descriptions. Instances of incomplete implementation were detected in this way. Recommendations were made which, if followed, would assist in the further implementation of the role descriptions of a fully-implemented CRIB Project.

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CHAPTER 1

THE PROBLEM

There are many innovations introduced into the school systems and they represent considerable investments of time, energy and money by their developers. The extent of adoption of these innovations can range from total rejection by their intended users to the situation in which an innovation becomes accepted as part of the fabric of the educational process. Evaluation is needed in order to measure the worth of the innovation and also the extent of its implementation. In many instances, however, a full-scale evaluation would carry too high a cost in terms of money, time, effort and possible negative effects on that part of the organization being evaluated. Customarily, therefore, provision is made for a small-scale evaluation of the innovation, often in the form of a report prepared by the developers, or else the evaluation goes by default. There is a need for styles of evaluation which will permit the measurement of the extent of implementation of an innovation and which will not be too demanding in terms of cost, resources and good-will. Such methods must still be able to yield sufficient information so that those responsible for the promotion, cancellation or redirection of the innovation may make an informed decision.

One innovative project of the Edmonton Public School Board (EPSB) system in recent years is the Curriculum Resources

Information Bank (CRIB) Project. The present study is concerned with the assessment of the state of implementation of the innovation, in terms of estimating the level of implementation of the role descriptions of those EPSB personnel involved with the Project, and with suggesting guidelines to decision-makers which should facilitate the further implementation of the Project.

Brief History of CRIB Project

The Curriculum Resources Information Bank Project was initiated in 1969 as a cooperative venture of teachers of EPSB system and members of the Department of Secondary Education, University of Alberta. Its major purpose is to provide teachers of junior high school science with ready access to a great variety of teaching resources or information about them, and as a consequence to bring about continual rational change in the science curriculum. The first bank to be developed was the Grade 9 Physical Science bank. Over a period of years previously, Edmonton science teachers had gained considerable experience with developing or teaching a large number of new courses. It was important that the results of these individual efforts be collated, shared and expanded. The vehicle developed for this sharing is a series of Keysort card banks in which curriculum information is collated and organized by science teachers into five sub-banks covering Content Detail (CD), Lesson Plan Teacher Part (LP-T), Lesson Plan Student Part (LP-S), Audio-Visual Aids (A-V) and Problems and Test Items (PT). There is also a summarizing Master Card sub-bank (MC). An open-ended coding system is incorporated to facilitate the storage and retrieval of

information and to permit addition and revision of information.

Initially, ten data banks were prepared, field tested for one year, evaluated on the basis of the test and placed back in the schools for further use. Gradually the Project was expanded to the stage where every school which is offering Grade 9 science in EPSB system has had a bank made available to them. Subsequently, the biological sciences bank for Grade 7 and the earth science bank for Grade 8 were placed in every junior high school.

Two evaluations have been carried out, one in 1972 (Evaluation and Revisions Committee, 1972) and again two years later (Phare and Sware, 1974). From these reports it appears that teachers want continued access to the banks for the planning of their courses. The report by Phare and Sware showed that three-quarters of the teachers sampled used, in those areas covered by the CRIB Project materials, the banks for more than 50% of their programs.

Despite these successes it can be said that none of the objectives of the Project (Appendix 1, p. 62) has been achieved completely. For example, the objectives lay stress on mass teacher involvement in the improvement of CRIB Project materials. This requires the contribution of feedback on the bank materials which to date teachers have been reluctant to provide.

Statement of the Problem

There are two components of the problem.

1. The State of Implementation Component. CRIB Project objectives have not been fully achieved. If these objectives are considered to reflect the intentions of current users, facilitators

and maintainers of the Project, how can the establishment of guidelines towards further implementation be aided so that the original objectives can be achieved to a greater degree? In this study an Idealized Model of a fully-implemented CRIB Project is created and this Model provides, along with other facets of CRIB Project, the idealized role descriptions of members of EPSB system who are participants in CRIB Project. The idealized role descriptions are descriptions of how the personnel would be performing if CRIB Project were fully implemented. With the model as a standard, and with the knowledge, also provided by the study, of the perceived current state of implementation of the role descriptions of the personnel of CRIB Project, decision-makers will have a basis for the formulation of guidelines for the further implementation of the idealized role descriptions, and hence of CRIB Project.

2. The Methodological Component. How can the evaluation of the current state of implementation of the role descriptions of CRIB Project be carried out with limited resources in such a way that the methodology so devised will perform the required evaluation within acceptable limits of validity and also serve as a conceptual framework within which assessments of the state of implementation of role items of other innovations can be measured?

Overall Design of the Study

1. The State of Implementation component. The design of the study was conceived in four stages. The first three stages were concerned with the development of a Revised Idealized Model of CRIB Project which was intended to represent, within the delimitations of

the study, how CRIB Project would look if all the Project objectives (Appendix 1, p. 62) were being fully implemented. The fourth stage was an attempt to assess the current state of implementation of the roles of personnel involved with CRIB Project.

Stage I: Formulation of an Idealized Model. The related literature was surveyed in the areas of curriculum development, implementation of educational innovations, modes of handling information such as the materials in the banks, and the role of the teacher in the development and implementation of curricula. From this survey and CRIB Project rationale, and using the two previous evaluation studies on CRIB Project (Evaluation and Revisions Committee, 1972; Phare and Sware, 1974) the Idealized Model was constructed. This model is the model of an ideal; the ideal is the fully-implemented CRIB Project. The model reveals the linkages and relationships which would exist in a fully-implemented CRIB Project and provides role descriptions of all users, facilitators and maintainers of the Project. The Model is given in Appendix 1.

Stage II: Validation of the Idealized Model. In this stage, validators drawn from those who have made or could make a contribution to the realization of the complete implementation of CRIB Project, were asked to react to the Idealized Model and indicate if it accurately reflected their perceptions of how a fully-implemented CRIB Project would look if it were in operation. This was not an evaluation of the current state of implementation of CRIB Project; it was an attempt to describe how the Project would be operating in a fully-implemented state.

Stage III: Revision of the Idealized Model. When all the comments from the validators were received, the Idealized Model was revised and expanded in the light of these comments to yield the Revised Idealized Model. It was this document which formed the basis for the evaluation of the present state of implementation of the role descriptions of CRIB Project.

Stage IV: Assessment of the perceived current state of implementation of the CRIB Project role descriptions. At this stage an assessment was made of how fully the current state of implementation of the role descriptions of CRIB Project, as perceived by the role holders, matched the role descriptions of the Revised Idealized Model of a fully-implemented CRIB Project.

2. The Methodological Component. The study attempted to develop a generalizable technique of evaluation which will be appropriate for the evaluation of the extent of implementation of role descriptions of other programs where limited resources of time, money and manpower are available for evaluation purposes. It proceeds by drafting role descriptions for an Idealized Model and then comparing the current level of implementation of these role items with the standard of full implementation laid down in the Idealized Model. To achieve its ends, the technique relies heavily on input from personnel of the school system who are or were or should be (according to the Idealized Model) closely involved with the development, adoption and implementation of the project being evaluated. Since the sources of information might be considered susceptible to bias, concerns over the validity of the results can arise and will need to be

balanced against any advantages of the technique.

One of the concerns of this study has been to ensure, to the extent that it is possible, that the needs of the decision-makers in EPSB system are served. The tendency in current evaluation research writings is to recommend moving away from the assumption that "evaluation results will ipso facto determine the future course of a program" (Wergin, 1976) to a position where either evaluation is a judgemental process and accordingly the evaluator's conclusions should heavily influence policy decisions, or where evaluation is a component of program development and the evaluator's role is to aid the decision-makers. An attempt has been made in this study to ensure that the decision-makers receive not only the data which they feel are important to their decisions but in addition other data which reflect a wider perspective and which they may use to make decisions on a broader base. The process whereby this has been attempted is to ensure that the decision-makers have been included in the Idealized Model as facilitators and in Stage II as validators.

Definitions

Adoption: The decision to use an innovation or an innovative idea. In most innovations there are two possible adopter groups: (a) a group or individual in authority who decides to adopt the innovation on behalf of the users, or (b) the user group, or some portion of it, who decides to use the innovation. (Fullan and Pomfret, 1975).

Central Office: The administrative core of the Edmonton Public School Board system. The service departments, such as the library, Instructional Media Centre and Information Systems branch, are located here also.

Curricular Associate: A teacher of EPSB system who also assists in the development and implementation of curricular innovations. The curricular associate (also known as curricular coordinator) is allowed 0.3 time for curricular duties and 0.7 time for teaching.

Curriculum: The components and materials of the CRIB Project banks.

Curriculum Change Process: For the purposes of the study, this means the delegation to the classroom teacher of substantial decision-making responsibility to choose his or her curriculum. Within the CRIB Project concept this implies that no two teachers need to have the same curriculum or that a teacher will have to teach the same program twice consecutively. It is proposed that the variety of curriculum alternatives provided by well-developed banks would allow this flexibility in curricular planning and teaching.

Developers and Maintainers: The personnel in EPSB system who contribute ideas and materials to the banks, either individually or through participation in organized group writing sessions.

Facilitators: The personnel of EPSB system who make the primary or global decisions in the school system and whose participation is essential to the very existence of CRIB Project and its efficient development and functioning. Their direct involvement in the development and maintenance of the banks is minimal or nil.

Idealized Model: A model (qv) which attempts to portray CRIB Project in its ideal state of having been fully implemented.

Implementation: This is used in the sense employed by Fullan and Pomfret (1975) as the actual use of the innovation. It is sometimes known in the literature as acceptance.

Implementation of CRIB Project: The process of increasing the extent of achievement of all the Project objectives (Appendix 1, p. 62). In this sense, the implementation will always be continuing since on the one hand new information on curriculum, instruction and evaluation is continually coming forth from various sources and this information needs to be added to the banks, while on the other hand the banks must be continually revised on the basis of the accumulated experience that teachers provide as the materials are used by them.

Mass-Teacher Involvement: The involvement of all or nearly all teachers in the range of activities specified in the CRIB Project objectives (Appendix 1, p. 62) ranging from direct use of the information in the banks for lesson preparation to being a member of a curriculum development committee charged with the responsibility of preparing materials for the banks.

Middle-Budget Programs: An arbitrary term to describe programs costing between, say, \$20,000.00 and \$200,000.00.

Model: A representation of an innovation showing, among other facets, itemized role descriptions of the participants in the innovation.

Multiple-Respondent Questionnaire: A questionnaire in the Stage IV assessment which applied to a role, such as a teacher,

which had more than one role holder.

Non-User: One who could use the banks but for some reason has chosen not to do so.

Revised Idealized Model: The document which results when the Idealized Model has been modified by a panel of revisers in the light of the comments received from the validators (qv). The modifications are designed to make the Idealized Model conform as much as possible to how the validators perceive their roles and those of others in a fully-implemented CRIB Project.

Reviser: A member of a panel formed to incorporate the comments of the validators into the Idealized Model.

Role Description: A compilation of those ways of behaving towards CRIB Project which are expected of those individuals who occupy positions in EPSB system which impinge upon CRIB Project. (Adapted from Gross , Mason and McEachern, 1958.)

Role Item: One of the specific behaviors which make up a role description.

Single-Respondent Questionnaire: A questionnaire in the Stage IV assessment which applied to a role, such as Director of CRIB Project, which has only one role holder.

User: A person who makes use of the materials in the banks. Users are primarily the science teachers who use the materials to plan at least some part of their courses.

Validation: For the purposes of this study, the process of making a model more effective and sound. The Idealized Model will be validated by making it conform as much as possible to how personnel who currently know CRIB Project or other innovations perceive how a

fully-implemented Project should look.

Validator: One who has been selected because he or she is or was or should be (according to the Idealized Model) closely involved with the development, adoption and implementation of the project being evaluated.

Delimitations of the Study

This study required an assessment of the current state of implementation of the role descriptions of personnel involved with CRIB Project. The study does not evaluate the worth of the Project or its objectives in either a comparative or absolute sense. It does not seek to evaluate such legitimate concerns as (i) the quality, comprehensiveness, usefulness and retrievability of information in the three science banks, (ii) the extent and mode of information in the three banks, (iii) the impact of the use of the banks on children's learning, (iv) the effect of involvement in the CRIB Project on the professional development of teachers, and (v) the cost-effectiveness of CRIB Project. The decision to focus the study on the extent of implementation of the role descriptions of personnel involved with CRIB Project and the development of guidelines to aid the further implementation of these roles rather than on an absolute measure of the achievement of Project objectives was made because of restrictions of time, money and resources.

A further delimitation of the study is that little or no attention will be given to the mechanics of the process of preparing and revising the materials in the banks.

This study will be further confined to the implementation of the junior high school science banks in the Edmonton Public School Board system. It is important to mention this delimitation because science teachers in a number of other school systems are using these banks; also, within EPSB system banks are being developed in other subject areas and at other grade levels. It should be noted, however, that the study should provide a prototypic instance of a methodology that could be used in other situations with other subjects, grade levels, school systems and types of innovation.

Limitations of the Study

Because evaluation is involved in this study, cognizance must be made of the possibility of experimenter bias. The author of this thesis is in favour of CRIB Project and his doctoral supervisor has been involved with the Project since its inception, though lately the extent of involvement has been reduced. The possibility of experimenter bias therefore exists. There are, of course, advantages in having an evaluator be familiar with the project he is evaluating since he is then aware of many of the interrelationships and hidden goals of the project. This aspect of the study is considered in Chapter 2 and again in Chapter 3. In the present situation the design of the study tends to minimize the biases of the experimenter and his supervisor. The writer saw his role in the study as mainly that of being a channel through which data were sent. The design of the study calls for the comparison by personnel of EPSB system of how they perceive the role descriptions of the Project personnel are being implemented compared with the Idealized Model's

description of a fully-implemented set of role descriptions. This technique tends to reduce the effect of experimenter bias but it lays the study open to the possibility of bias from the validators in Stage II and the questionnaire respondents in Stage IV. Bias was not seen as a great problem in Stage II where the personnel, although specially selected as being closely involved with CRIB Project, were not being asked to judge the 'worth' or 'goodness' of CRIB Project but rather to speculate on an artificial situation, namely the concept of a "fully-implemented CRIB Project." It is hard to see any overt or covert motivation for bias in the cause of self-advantage; certainly, such a bias would be detected in the revision process. In Stage IV the problem of respondent bias was more acute. In the questionnaire the respondents were first asked to rate on a four-point scale the extent to which they presently undertake the role items assigned to their position in EPSB system. The techniques available to the researcher to cross-check the data given in this questionnaire task were limited and so the results give an estimate of the perceived level of implementation rather than the actual level of implementation of the role items.

A further limitation is that in some instances the same people were required to react to the Idealized Model in Stage II and respond to questionnaires in Stage IV. These people are holders of specific offices within EPSB system and their double involvement could not be avoided.

Caution is required in any extrapolation of this plan or methodology to other systems since the study is based solely on performance and conditions within a specific school system and on

feedback data from personnel within that system.

EPSB system has placed definite limitations on the collection of data from its members. No member of the system may be asked to comment on the current degree of implementation of the role items of any other member. The questionnaire in Stage IV had to be brief and unreactive. One follow-up letter was allowed but no probing of non-returns was permitted.

Significance of the Study

The significance of the study relates to the effect on CRIB Project and on evaluation research:

1. Significance to CRIB Project:

- (i) It provides guidelines for decision-making in order to achieve a higher level of implementation of the objectives of CRIB Project.
- (ii) It leads to an increased awareness throughout all levels of EPSB system of the aims of CRIB Project.

2. Significance to implementation theory:

- (i) It makes a fundamental contribution to the techniques of providing guidelines for the further implementation of the role descriptions of personnel involved with an innovation.
- (ii) It provides a prototypic procedure for the low-budget assessment of role item implementation of similar middle-budget projects in other areas.
- (iii) It indicates a possible technique whereby the

decision-making processes may be aided by the participation of the decision-makers in the evaluation.

CHAPTER 2

RELATED RESEARCH

The literature survey begins with a review of current curriculum development theory in order to establish the place of CRIB Project in current educational development trends. The survey then parallels the study itself by making a detailed examination of the implementation of educational innovations with two areas, the role of the teacher in successful implementations and the adoption and implementation of science curricula, being given special attention. As with the study, the final section is concerned with issues in the evaluation of curricula with special attention being paid to the politics of evaluation.

Curriculum Development Theory

The classical model of curriculum development, as espoused by Tyler (1949) and others, involves a sequence of determining objectives, stating them in their proper form, devising and organizing learning experiences so that specified outcomes can be attained, effecting these experiences and, finally, evaluating to see if the outcomes have been attained. There have been criticisms of this model both on the grounds that to follow it is difficult or impractical (see, for example, Eisner, 1967) and on the grounds that it does not represent how curriculum developers work in practice (see, for example, Walker, 1971). Other writers have

modified the model in an attempt to make it a more accurate reflection of the way in which, their experience suggests, curricula are customarily developed. Blaney (1974) suggests that program development should be systematic, but not necessarily unilinear as in the classical model. He maintains that in reality program development is a multi-dimensional process since the stages in it are considered at several interacting levels of decision-making and at different times.

Some theorists have come a long way towards the position that the realistic way to design and implement curricular projects is to take advantage of the diverse interests and expertises of a wide range of educators and subject-matter specialists. Some curricular experts go further than this and encourage interactions between these different sources of input. Aoki (1974) advocates what he calls a "mutualistic" model where the goals and means are "interactively related". Thus he maintains that formulation and means-designing go together in complementary fashion, that goals are never entirely clear, that the shortest and quickest way to the goal is not necessarily the best, and that the means may be just as important as the goal. New sorts of questions have to be asked of the program development process under these conditions. No more is it to be assumed that goals are set by one group and the means developed by another group. Aoki would have us believe that in the mutualistic paradigm we should somehow arrange for the same group of people to be involved with both ends- and means-development. These views would indicate that the rationale for CRIB Project, which calls for the mass involvement of teachers and others in the

curriculum development process in a highly interactive manner, was in tune with or in advance of these attitudes towards the development of programs.

Implementation of Educational Innovations

The principal cause of the shift away from a linear conception of curriculum development towards a mutualistic or interactive one in which the user has at least some input into the new program has been the realization that the human factor is an important part of any developmental exercise. Today the theorist is much more willing to consider what the recipient of the developed material will actually do with it rather than limit his thinking to what the recipient should ideally do with it. This realization of the importance of human attitudes has sprung in large measure from modern systems of implementing innovations, educational or otherwise. Accordingly, it is useful to consider the development and installation in the classroom of curricula or curricular materials as an exercise in the implementation of innovations.

Havelock (1973) identifies the main models of educational change. He names the categories into which the models fall as: Research, Development and Diffusion (RD&D), Social Interaction, and Problem Solving. He adds a fourth category of his own which uses elements of the first three and which he calls the Linkage Model. Most educational innovation to date has proceeded by means of the RD&D approach even though the model has certain inherent disadvantages. By its very nature it assumes that innovations are developed centrally by experts and, once tested, are disseminated

universally to the schools. As a consequence, the user has a relatively passive role in the process, either accepting or rejecting the packaged innovations. What happens is well known: teachers tend to accept those parts of innovations which suit their current philosophy and methods of teaching but rarely do they accept an RD&D innovation entirely. Usually, too, the decision to adopt is made by an authority figure (School Board, Superintendent, Principal, etc.). As House (1974) expresses it: "Often the only choice left to a classroom teacher concerning an innovation is to either accept it or reject it and he usually exercises this option by rejecting, in whole or in part, the innovation."

On the surface it would appear that since CRIB Project was essentially a grass-roots development it therefore avoids the problem of coercion arising from decisions made by authority figures. This may well be so. However, such a stance assumes that all teachers are on the same authority level and have the same interest in curriculum development. This may not be the case. It is quite possible for one teacher to feel that a decision made by other teachers is an authority decision and hence to be treated like many authority decisions and so be partially or wholly ignored or thwarted.

The Social Interaction model and the Problem Solving approach are not completely appropriate to the educational setting. The Social Interaction model is more of a study of the rational diffusion of innovations through a system rather than a strategy of planned change. Its roots are in sociology; Rogers and Shoemaker (1971) exemplify the tradition. Havelock (1973) suggests that the

body of research associated with Social Interaction tends to support four generalizations about the process of innovation diffusion. They are:

1. That the individual user or adopter belongs to a network of social relations which largely influences his adoption behavior;
2. That his place in the network is a good predictor of his rate of acceptance of new ideas;
3. That informal personal contact is a vital part of the influence and adoption process;
4. That group membership and reference group identifications are major predictors of individual adoption.

The study of diffusion is a fairly limited portion of the total study of the change process. It is further limited by concerning itself, by definition, only with innovations that have been developed from outside and implanted into the society under study. Another deficiency is that it is concerned with adoption, or token acceptance, and not with full implementation.

The Problem Solving approach is usually seen, to quote Havelock again, as:

A patterned sequence of activities beginning with a need, sensed and articulated by the client, which is translated into a problem statement and diagnosis... The client-user is then able to conduct a meaningful search and retrieval of ideas and information which can be used in formulating or selecting the innovation. (p. 155)

When this has been done the user needs to concern himself with adopting the innovation, trying it out and evaluating its effectiveness in satisfying his original need. Fullan (1972)

approves of this model as it is concerned "squarely with users' needs and orientations." But he does point to two shortcomings of the model. First, the use of a problem-solving sequence involves a specific need and solution which cannot be generalized into a more universal capacity for helping innovations. Second, there may be a tendency to concentrate on a specific problem and its needs without making a consideration of whether the system needs instead a fundamental restructuring. There is a further limitation in that the problem to be solved is framed in terms of the client's perceptions which may not be those of the user.

Havelock's Linkage Model draws on facets of the three previous models to develop a prescriptive technique for smoothing the introduction of an innovation. Attention is paid to the formation of relationships, diagnosis of problem areas, choice of the most appropriate solution and other devices. But this system, like the RD&D model, lays itself open to the charge that the user of the innovation is catered to only as someone who must be convinced that the particular innovation is good, necessary, and a significant improvement, but there is no requirement that the user be made an integral part of the change plan. Havelock makes use of the word 'client' to describe the customer who is purchasing the innovation, but in reality the true customer of the innovation is usually someone further down the totem pole.

Despite the wealth of theoretical and practical efforts to understand and facilitate the implementation process, it remains true that the literature on reports and evaluations of change attempts in an educational setting makes fairly dismal reading.

In one of the more recent and comprehensive surveys of these reported failures, Fullan (1972) gives the following lessons as the fruits of his analysis:

1. Despite massive inputs of resources during the last 15 years, and despite numerous adoptions of innovations, very little significant change has occurred at the school level corresponding to the intended consequences of these innovations.
2. The modal (i.e. usual) process of change has been characterized by a pattern whereby innovations are developed external to schools and then transmitted to them on a relatively universalistic basis. The consumers or users of innovations (teachers, parents, students) have had a limited role in this process, but rather are seen as relatively passive adopters of the best of recent innovations. . . .
3. The following implications of the modal process just described are evident:
 - a) The values and goals of the users as articulated by them have no direct input or influence in the process. . . .
 - b) Social system or role changes in user systems, which are theoretically part and parcel of the intended consequences of most recent educational innovations are not recognized and planned for. . . .
 - c) The dynamics of the process of role change have been entirely misunderstood and neglected. There is little awareness that innovations require unlearning and relearning and create uncertainty and a concern about competencies to perform these new roles. . . .
 - d) Consequent to (c), new educational ideas and organizational changes that are introduced become empty alternatives inasmuch as they create unrealistic conditions and expectations for user performance. . . .
 - e) The most effective solution can probably never come through the introduction of more and more innovations with additional resources. . . . (p. 15)

Fullan's statement represents one of the strongest indictments of traditional procedures of implementation of educational innovations. House (1974) covers much of the same ground and

comes to the same conclusion as does Fullan. Both writers stress the importance of involving the user in the innovative process. In a recent work Fullan and Pomfret (1975) examine several studies which addressed the extent of implementation of innovations. They report that they have not been able to find any research in education which adequately measures, for the degree of implementation of a given innovation, the effect of participation by the users in the innovation process. They report a study by Duet (1972) which shows that the degree of implementation of a secondary school Language Arts program was related to active user involvement in the development process rather than mere participation in decisions (of the curriculum committees). There were, however, methodological limitations of the study, especially since selection factors were not known. An analysis of a study by Hestand (1974) on differentiated staffing in an elementary school attributed the success of the implementation to the high level of significant decisions taken by the teachers, the high degree of collaboration between administrators, consultants and teachers, and the high level of direct support which was given to the teachers. Whilst these findings are not conclusive, they do point in the direction of indicating that active support and participation and actual developmental work by the teacher is a cause of successful implementation. Even though CRIB Project rationale offered no hard evidence on this point, it may have been a deeply held feeling on the part of the Project developers when they called for massive participation by the teachers who were destined to become the users of the banks and full participants in the Project.

Curriculum development theory has indicated that the teacher, as user, should be involved in making some of the decisions during the development stage of a curriculum and its materials. This review of the implementation of educational innovations points in the same direction. While it has not been proven that teacher involvement is absolutely necessary for the implementation of an innovation, there is much evidence that without such involvement the intent of an innovation is likely to be ignored or subverted in some way.

Role of the Teacher in the Implementation of Educational Innovations

In this section the emphasis shifts to a consideration of how teachers treat an innovation as they incorporate it into their teaching strategy. As has been shown in the previous section, there are few instances of an innovation being implemented exactly as the designers planned, and, it seems, this situation will not change until all teachers can be involved in the decisions and development of the innovations they are expected to use. However, given the difficulty of implementing an innovation exactly as planned, there is a wide area where teachers implement an innovation at least in a manner which reflects part of the developers' intentions.

Teachers are not opposed to innovations per se. In fact, teachers often innovate on their own initiative, albeit usually on a small scale. Where do teachers find the ideas which either they try out in their own classrooms or which spur them on to make an attempt at developing a new program? Hotvedt (1973) is quoted by House (1974) as finding that fully 54% of a teacher's personal

sources of information were among their closest friends and closest work associates at school. Wolf (1973), also quoted in House (1974), found a figure of 74% among a different sample of teachers.

Haller (1969) investigated elementary schools in Ontario and found that teachers were not averse to innovations being introduced but that the most popular source of new ideas was their colleagues.

Once an innovation has been accepted by a teacher, there is still the likelihood that he or she will use it, perhaps unwittingly, in a way which the designer did not intend. The extent to which an innovation is distorted by the user is gaining increasing attention in the literature of educational implementation. Two questions suggest themselves. First, do all teachers implement a set curriculum in a set way? Second, are the intentions of the curriculum followed by all teachers? The evidence available to answer the first question suggests that teachers do not in fact implement a curriculum all in the same way. In a study associated with the Biological Sciences Curriculum Study (BSCS), Gallagher (1967) reports that biology teachers, even those trained in BSCS special centres, varied widely in their use of the same materials. Balzer (1969) also studied the use of BSCS materials and found many differences in the teaching which could not be attributed to the training in the use of new materials or in the materials themselves. Balzer also addressed the second question and found that teachers who were supposed to be stressing high levels of thinking were still giving appreciable emphasis to low levels of thinking in their classrooms. House, Steele and Kerins (1971) report that with independent study programs teachers often 'transform' the programs'

intents. In one program where grades were not to be given, the teacher covertly introduced a system of 'black marks' that were assigned to students who did not complete their homework in time.

The minimizing of the distortion of an innovation by a teacher who integrates it into his or her existing operating strategy depends on how closely the innovation fits the recipient's current strategy and how well he or she has been prepared by in-service programs or active participation to accept the innovation. Conversely, the greater the disparity, the greater will be the distortion. House (1974), in what appears to be a plea for mutual understanding, says:

If one compares the original innovation with its implementation, it looks impure. . . because of the perversity of the receiver. But that is because the sender sees just the pure light of his own message. The receiver, the teacher, sees a melange of messages traveling to him over his own personal social networks. He integrates them, as he understands them based on his own reference groups. In those rare cases where the innovator and teachers work closely together, the teacher's view may be very close to the inventor's, blocking other messages. (p. 14)

In order to take into account each teacher's unique approach to his or her task, and to make a virtue of distortion by teachers, Connelly (1972) advises developers that:

For maximum utility to teachers, the materials ought to include a layman's account of the theoretical basis for the materials and an account of the curricular possibilities latent in them. The function of user development is to construct images of particular instructional settings by matching a variety of theoretical conceptions with the exigencies of these settings and to translate these images into a curriculum-in-classroom use. In this translation teachers choose from among available materials those that best suit their images. (p. 176)

Connelly holds that the effects of the accepting of this functional view of curriculum development on external developers and teachers would be that the adoption of the new product would amount simply to treating curriculum materials as alternatives for teacher choice. A far cry indeed from the "teacher-proof" curriculum! CRIB Project accepts and encourages the emending of its materials by teachers but demands feedback from the teacher so that fruitful 'distortions' will be available to future users of the materials.

Development, Adoption and Implementation of Science Curricula

In this section the ideas discussed in the previous two sections are applied to the development, adoption and implementation of science curricula. Some of the examples have appeared already and others will be introduced.

The 1960's saw an explosion of new science curricula produced in the United States, Britain and elsewhere. These programs were generally developed by agencies other than schools and with varying degrees of teacher participation. The vast majority of the programs were of the RD&D type with more or less attention being paid to the advance or in-service preparation of the teachers who were to use the curriculum package.

The extent to which a curriculum has been adopted may serve as one measure of its success. For example, Becher (1971) found that in Britain: "O-level science programs (from Nuffield Project) were . . . being used in one form or another in at least 45% of the schools with O-level streams." Mayer (1970) reports that BSCS Biology courses have been adopted with local adaptations by nearly

50 countries all over the world. In addition to these there are available other more qualitative findings, such as: "Enrollment in physics departments of high schools has continued to drop even after the introduction of Physical Science Study Committee (PSSC) Physics" (Bridgham and Welch, 1969), and: "The Yellow Version was the most widely used in comparison to the other BSCS Versions" (Blight and Bila, 1968). In this sense of the term 'adoption' CRIB Project has a perfect record since it has been installed in all the junior high schools of EPSB system. However, this knowledge sheds no light on how the teachers have implemented not only CRIB Project materials but also the CRIB Project philosophy of teacher contributions to the banks. There is a wide gap between adoption and implementation.

There are few evaluations of the extent to which science teachers implement a new curriculum by changing their instructional strategies. Gallagher (1967) has found that for one of the BSCS Biology programs, each teacher presented his own interpretation of it and that these different approaches resulted in different ideas and concepts being presented to the students. On the other hand, a recent study by Orgren and Doran (1975) revealed that even when adoption of a science curriculum (in this case the Revised New York State Regents Earth Science Syllabus) is mandated, there was a "more frequent employment of the teaching behaviors advocated by that curriculum", indicating that implementation was following forced adoption. A British study by Kelly and Monger (1974) of the extent of implementation of the Nuffield O-level biology course, some five years after the course materials had become commercially

available, revealed inconsistencies between "teachers' understanding of the objectives and content, the actual conduct of the courses in the schools, and the objectives and content of both the books and the examinations." (p. 715)

The indications would appear to be that there are indeed appreciable distortions accompanying the implementation of science curricula. Whether this is necessarily a bad thing has been debated in the previous section. It would seem that if the curriculum is designed to resocialize teachers into changing their classroom behaviors appreciably, then extensive participation by teachers in the decision-making and developmental aspect of the new curricula is required; if, however, the curriculum is designed to be simply a source of alternatives to the teacher, then it would appear that teacher participation, while desirable, is not essential. Most new programs, including CRIB Project, do have expectations of changes in teacher behavior, and these programs must pay attention to how those changes are to be brought about.

Evaluation of Programs

The previous topics in this survey of related research have been required to set the scene for the first three stages of the present study. The final stage of the study, Stage IV, was, in essence, an evaluation, and so it is appropriate that this chapter end with a discussion of some recent concerns in the evaluation of programs.

A recent review (Wergin, 1976) serves to clarify the different approaches to evaluation. Wergin classifies current

approaches into three types:

Extrapolicy approaches share the general assumption that evaluation results will ipso facto determine the future course of the program. Suprapolicy approaches share the contention that evaluation is by definition a judgemental process and should, therefore, dictate policy decisions. Intrapolicy approaches may be characterized by the conviction that evaluation should be a component of program development and should therefore be undertaken to serve the needs of the decision makers. (p. 78) (original emphasis)

At the outset it should be said that the type of evaluation attempted in Stage IV of this study was an intrapolicy approach. However, it will be helpful to review each of Wergin's types in turn.

Extrapolicy approaches attempt to make evaluation as objective as possible. The Tyler (1949) psychometric technique is a classic example of the extrapolicy approach. It has been colloquially described as the "Let the chips fall where they may" approach to evaluation. While this type may well turn up accurate and appropriate information, it tends not to lead to profound changes on the part of the client. House (in Rippey, 1973) feels that evaluators expect the client to change his self image but provide information that does not affect the client's image at all. McDill et al. (in Rossi and Williams, 1972) examined a large number of social action programs and found that their evaluations showed few persistent and consistent results that could be attributed to the programs. These evaluations, be they negative or positive, generally failed to be the cause of an alteration in policy. For example, Wholey (1972) reports on the Westinghouse-Ohio University evaluation of the Head Start program for disadvantaged children:

It revealed that one, two and three years after children from low-income families had gone through the Head Start program, there was little or no improvement in their cognitive achievement or motivational attitudes (when compared with similar children in the same communities).

The Westinghouse evaluation of the Head Start program therefore produced generally negative findings. The negative findings, however, did not significantly reduce the budget level of Head Start. Powerful constituencies would have fought any reduction in funding for Head Start. (p. 362)

As a reaction to many such instances of uninfluential evaluation reports, there was a trend towards strengthening the role of the evaluator in the decision-making process. Accordingly, suprapolicy approaches were developed. In these techniques the evaluator dictates decisions concerning the future of the program. In order to be able to do this, the evaluator evaluates performance according to objectives, in the traditional manner, but also he evaluates the objectives themselves. Scriven is an advocate of this approach; in his classic paper (1967) he described evaluation thus:

Evaluation is itself a methodological activity which is essentially similar whether we are trying to evaluate coffee machines or teaching machines, plans for a house or plans for a curriculum. The activity consists simply in the gathering and combining of performance data with a weighted set of goal scales to yield either comparative or numerical ratings, and in the justification of (a) the data-gathering instruments, (b) the weightings, and (c) the selection of goals. (p. 40)

Of course, the evaluation of objectives is a highly judgemental activity. Stake (1970) distinguishes two types of value analysis: (1) A logical analysis to check on the reasonableness of the selection of objectives, given a certain value position, and (2) An empirical analysis to see how broadly certain value-

positions are held. Objectives, and the value of objectives, are judgemental data. Such data, for Stake, are those data which enter into the decisions of worth. It is in this sense of arriving at decisions of worth that the evaluator can dictate decisions in a suprapolicy approach. However, just because a decision-maker is told what decision he should take, and why, does not guarantee that he will take it.

With intrapolicy approaches to evaluation the argument runs that in order to ensure that the evaluator has a greater effect on the decision-making, the focus of attention must shift to the decision process itself. This does not mean that the evaluator actually makes the decisions but that he takes pains to ensure that the information supplied to the decision-maker is the most suitable for the making of that decision. Wergin classifies Stufflebeam's et al. (1971) Context, Input, Process, Product (CIPP) model and the Provus (1969) Discrepancy Evaluation model as intrapolicy evaluation techniques because they are oriented towards the provision of information for decision making. These techniques will really only be intrapolicy types if the decisions for which the information is being gathered are the decisions which the decision-maker sees as being the ones that have to be made, and are not simply the decisions which the evaluator feels should be made. The evaluator needs to be politically attuned in order for both these sets of decisions to be the same. Transactional evaluation, formulated by Rippey (1973) emphasizes the importance of organizational decision-making processes and even involves the key decision-makers of the organization in the implementation and evaluation plan. Obviously,

the evaluator as implementer, problem-solver, cajoler and friend is a far cry from the evaluator as white-coated scientist seeking objective answers to educational problems. Benveniste (1972) in a discussion of social scientists in general (of whom evaluators may be considered a part) suggests that these two extremes have yet to be but must become amalgamated:

The emerging breed of experts actually plays a role that is still in the process of creation. It is being invented by the extension and adaptation of two existing roles in the repertoire, by a combination of the political and scientific roles, which are generally understood as separate and distinct. (p.7)

The new experts still face the challenge of inventing and playing a new role that is not generally perceived as such. During these formative years, they encounter serious difficulties because they have to use an existing role - that of social scientist - to attempt to fill needs they consciously or unconsciously recognize. These constraints are the result of the differences between the existing roles, i.e., on the one side the value-free scientist. . . and on the side the client-politician. . . who spells out the values to be pursued. (p. 10)

This amalgamation of roles leads, according to Benveniste, to an uneasiness in the mind of the social scientist which affects his relationship with his clients and colleagues. As a result, he adopts subterfuges to achieve the political ends he sees as important. Toh (1976) discusses what he calls the 'socio-politics' of evaluation and suggests that the evaluator must make conscious efforts to mitigate "problems emerging from divergences in role-expectations between those evaluating and those whose activities, programs and institutions are being evaluated." The evaluator must become more keenly attuned to the social and political factors which operate to keep the evaluation from having the desired impact.

As Weiss (1973) says: "Many of the problems that still bedevil the evaluation enterprise are not so much failures of research expertise as they are failures to cope adequately with the political environment in which evaluation takes place."

The current emphasis on making the results of an evaluation cause changes (if they are deemed by the evaluation to be needed) in an organization is discussed at length by Guba (1975). He is concerned with the utilization of evaluation information, using the word 'utilization' in its proper sense of 'making the best use'. He has isolated seven factors which he feels need to be taken into consideration if the utilization of the results of an evaluation is to take place. His seven factors are:

1. Purposes of evaluation. (What are the covert foci of the evaluation?)
2. Criteria of good evaluation (as described by Stufflebeam et al., 1971: internal and external validity, reliability, objectivity, relevance, importance, scope, credibility, timeliness, pervasiveness and efficiency).
3. Discrepancies between plans and operations (is the plan the evaluator expects to find the same as the one he does find?)
4. Audience differences (problems associated with attempting to pitch the report of the evaluation to differing audiences)
5. Rapid pace of change (does the evaluation become an ex post facto check on a decision already taken?)
6. Corruptibility of evaluators (can the client accept the findings of the evaluator as being free of perversion?)

7. Human and political factors (does the aversion to evaluation result in the shunting-aside of the evaluation results?)

Weiss (1972) approaches the problem of utilization from the standpoint of how does an evaluator, once he or she has obtained the best possible results, ensure that these results are put to work. She exhorts the validator to carry in the forefront of his mind the problem of ensuring that the results of his evaluation are relevant to the needs of the client, that the client receives the results, and that the client acts on the results. If bringing about these steps means that the evaluator must become advocate, then so be it. Only when his results have been used, Weiss believes, can the evaluator feel that his job is finished.

The current trend towards the utilization of the results of evaluation in the decision-making processes cannot be accomplished without penalty. The move from the traditional style of evaluation to the intrapolicy approach is a result of the inadequacies of the older styles in causing change in the program which was evaluated. However, the new style cannot match the traditional techniques in its objectivity. Whether this loss of objectivity can be kept within bounds is a concern of this study and of all evaluators involved with such intrapolicy approaches.

CHAPTER 3

EXPERIMENTAL PROCEDURE AND DESIGN

In this chapter, the design of each of the four stages of the study is described in some detail. Where appropriate, justifications of the methodology which was employed are undertaken.

The first three of the four stages of the study were concerned with the development of a Revised Idealized Model of CRIB Project. This model was intended to represent, as closely as possible and within the delimitations of the study, the role behaviors of those members of Edmonton Public School Board (EPSB) system who are or should be connected with CRIB Project, assuming that the Project rationale and objectives had been fully implemented. The fourth stage of the study was concerned with the estimation of how well the current implementation of the role items corresponded with the full implementation of the role items, as portrayed in the model. From this comparison it was possible to make recommendations which, if followed, should be likely to lead to the fuller implementation of the role behaviors required by the model of a fully-implemented CRIB Project; these recommendations are stated at the end of Chapter 5.

Stage I: Development of an Idealized Model of a
Fully-Implemented CRIB Project

The Idealized Model of a Fully-Implemented CRIB Project ("Idealized Model") was conceived as being required to fulfil several functions:

a) To inform. Since it was to be read and studied by personnel of the Edmonton Public School Board (EPSB) system, some of whom could not be expected to have even heard of CRIB Project, the Idealized Model needed to be capable of informing these people of the aims, objectives and scope of CRIB Project.

b) To channel. Since documents purporting to represent fully-implemented projects are not common in the school system, the Idealized Model had to ensure that its readers were aware of what the document was, what its purpose was, what their role as validators was, and, perhaps most importantly, that it was not an evaluation.

c) To limit and focus. Since this study is limited in that it deals only with a comparison between the current state of implementation of the Project, as measured in terms of the extent of involvement of EPSB system personnel, and a conceptualization of a fully-implemented Project, the Idealized Model was required to focus the validators' attention on those areas under discussion and to avoid concentration of effort on the areas outside the scope of the study, such as the impact of the use of the banks on children's learning.

d) To solicit reaction. Since the model was to be sent to validators in order that they might make it more realistic by commenting on its substance, it was important that the format of the document be designed to encourage such comments.

Compilation of the Idealized Model

In order to meet the requirements outlined above, the model was conceived as a document, written in four sections and prefaced by a covering letter which gave a brief history of CRIB Project, a brief outline of the present study explaining how the Idealized Model was just a part of it, and instructions on how the comments on the Idealized Model were to be made by the validators. Appendix 1 comprises the complete Idealized Model. The four sections of the model will be briefly described.

Section 1. CRIB Project is Located In this section the literature on curriculum development theory and implementation theory was examined. In essence, the material covered the same ground as the first four sections of Chapter 2 of this thesis and the text was a condensed version of these four sections. Wherever possible, parallels were drawn between the directions outlined in the literature and the directions indicated by CRIB Project objectives.

Section 2. CRIB Project is Defined In this section an attempt was made to isolate the concerns which become evident when ways are sought to implement fully the objectives of CRIB Project. Use was made of available Project documents such as funding proposals, evaluation reports (Evaluation and Revisions Committee, 1972; Phare and Sware, 1974), and published articles (Nay, 1973, 1975;

Roberts, 1973) to raise issues which the documents suggest need to be examined if an idealized model is to reflect the objectives of the Project. As can be seen in Appendix 1, the topics scrutinized were the scope of teacher involvement in CRIB Project and how it might be broadened and systems for information storage, retrieval and dissemination.

Section 3. CRIB Project is Examined In this section a schematic presentation was made of the linkages and relationships which would be required by EPSB system personnel and support services in a fully-implemented CRIB Project. The schematic representation is shown in Appendix 1, p. 61; the explanations and definitions of the components of the Figure are given in Appendix 1, Section 3.

Section 4. CRIB Project is Dissected In the final section itemized descriptions were given of the roles which should be played by those individuals and service departments whose participation was deemed necessary for the implementation and subsequent smooth running of a fully-implemented CRIB Project. The instructions to validators for this section, and the response sheets with the itemized role descriptions, are given in Appendix 1, Section 4.

An early draft of the Idealized Model was presented to two groups of Faculty of Education, University of Alberta, staff and graduate students for their comments. The suggestions which were made by these groups were incorporated into the Idealized Model before it was dispatched to the validators in Stage II.

Stage II. Validation of the Idealized Model

Introduction

In this stage the model was sent out to selected members of EPSB system. They were asked to comment on the document, indicating how well they felt it fitted with their conception of a fully-implemented CRIB Project. They were asked to concentrate their attention on the linkages and relationships portrayed in Section 3 and on the role descriptions laid out in Section 4 (See Appendix 1).

Selection of the Sample

Two criteria were established for the selection of the validators from EPSB personnel. Where possible, both were used but where this was not possible, one criterion sufficed.

Criterion 1. The validator is or has been actively involved in the initiation or development of CRIB Project, in the making of decisions concerning the Project or in the preparation of its materials.

Criterion 2. The validator is a member of EPSB system who either was identified by the Idealized Model as being a role holder whose participation would be necessary if CRIB Project were to be fully implemented according to its objectives, or was seen to possess a relevant expertise in an area related to but not part of CRIB Project.

The list of validators was compiled from an inspection of the organizational structure of the relevant segments of EPSB system and

from consultation with personnel, such as the Supervisor of Science and Health, who had been closely involved with CRIB Project over the years. The list was then submitted to two members of EPSB system Central Office administration who suggested two additions and one deletion; these suggestions were followed. The final list contained 50 names. Half of these were employed in or operated from the Central Office and half were employed in the schools as teachers, curricular associates or school administrators. The list of Central Office positions which were selected, along with the criteria used in the selection, is shown in Table 1. The numberings of the roles, corresponding to the numbering in Section 4 of the Idealized Model, are shown opposite those positions which were identified by the Idealized Model as necessary for a fully-implemented CRIB Project. The composition of the positions in the schools is shown in Table 2.

No attempt was made to obtain a random or unbiased sample. It was important, in fact, that the validators be committed to and knowledgeable of CRIB Project if they were to be expected to undertake fruitfully the quite arduous task of reading and commenting on the Idealized Model. There was the possibility that a validator would take the opportunity to indulge in self-aggrandizement when assessing the importance of his or her particular role in a fully-implemented CRIB Project. It was felt, however, that since the emphasis of the task of the validators was on a relatively abstract concept of a "fully-implemented CRIB Project" the danger was slight. Provision was made for the detection of such self-serving comments in the Stage III revision of the Idealized Model.

Table 1

Central Office Validators Selected for Stage II Validation
of Idealized Model

Number of Section 4 Role	Position in EPSB System	Criterion 1	Criterion 2
1.	Associate Superintendent of Curriculum		x
3.	Assistant Superintendent, Research and Evaluation	x	x
4.	Director, Curriculum Development	x	x
5.	Director, Program Supervision		x
6.	Director, Professional Development		x
7.	Director of Research	x	x
8.	Director of Evaluation		x
9.	Director, Educational Data Processing		x
10.	Director of Information Systems		x
10.	Coordinator, Computing Services		x
10.	Manager, Computer Operations		x
11.	Director, Pupil Assessment		x
12.	Supervisor of Science and Health	x	x
13.	Supervisor, Instructional Media Centre		x
13.	Consultant, Instructional Media Centre		x
13.	Consultant, Instructional Media Centre		x
14.	Supervisor, Library		x
15.	Supervisor, Mathematics		x
15.	Supervisor, Reading		x
	Supervisor, Curriculum		x
	Consultant, Outdoor Education		x
	Consultant, Pupil Records		x
	Consultant, Test Development		x
	Consultant, Inservice		x
	Consultant, Tests and Measurement		x

Table 2

Distribution of School-Based Validators in Stage II

Position in EPSB System	Number in Group	Criterion 1	Criterion 2
Principal, Junior High School	2	x	x
Principal, Elementary School*	1	x	
Assistant Principal, Junior High School	8	x	x
Curricular Associates in Science	5	x	x
Curricular Associate in Science who is the Current Director of CRIB Project	1	x	x
Classroom teacher	8	x	x

*The principal of this elementary school was in Central Office, EPSB system, in the year prior to the conduct of this study and was involved with CRIB Project during this time.

Procedure

Each validator received a copy of the Idealized Model, the covering letter which explained how the revisions to the model should be made, and another covering letter from the Director of Research and the Supervisor of Science and Health, EPSB system, requesting the validator's participation in the study on behalf of the school board. The Idealized Model is given in Appendix 1. Telephone calls were made to encourage the slower validators.

Each validator was asked to comment on the Idealized Model from the standpoint of how it reflected his or her perception of what a fully-implemented CRIB Project would be like. The validators were encouraged to comment on all four sections of the model and space for such comments was left at the end of each section. There was, however, very little response from the validators on the first three sections and most of the effort was expended on commenting on the role descriptions of Section 4. The validators commented in Section 4 by indicating the level of agreement with the role items. Section 4 was organized in a response format (Appendix 1, Section 4). The five response categories were: Agree Absolutely, Agree BUT..., Undecided BECAUSE..., Disagree BECAUSE..., and Lack Required Background. The three middle categories were worded so as to encourage additional comments from the validators. The validators were not restricted to commenting on their own roles but were asked to comment on all roles with which they were familiar. In this way it was possible to obtain not only the perceptions of the role from the point of view of the role holder but also from the personnel who

interact with that role. For the comments to the first three sections, rhetorical questions, designed to solicit response, were embedded in the text. Each document was code-numbered but not named, so ensuring the confidentiality of the validators. If a validator so chose, he or she could give his or her comments through an interview with the investigator.

Many comments were provided by the validators. They are examined in Chapter 4 of this study and are listed under the appropriate role item in Appendix 2.

Stage III: Revision of the Idealized Model

When the deadline for receiving the revisions was past, all the returned copies of the Idealized Model were examined for comments by the panel of revisers comprising the present writer and his doctoral studies supervisor. For the first three sections, the comments were entered on a grid labelled by section and by validator. For the fourth section, the comments were entered on another grid labelled by role item and by validator. The identities of the validators were known to the panel of revisers.

Rules for Amending the Role Descriptions

The panel of revisers amended the original role items in the light of the received comments. In order that this not be an arbitrary process, nine rules were established in advance and these guided the formulation of any changes in the role descriptions and

the rest of the model. The rules were:

1. Changes in the role items of a role description are to be made wherever possible if a comment is applicable to the role. All applicable comments by validators must be heeded.
2. In cases of conflicting comments priority is to be given to statements made by the role holders themselves and by those most likely to be the best informed of the requirements of the role by virtue of their closeness to it in the EPSB system hierarchy. An exception is made if the revisers feel that the role holder is deliberately indulging in self-aggrandizement.
3. Suggested additions to a role description are to be made if they are applicable to the role in question.
4. Role items are to be added if they arise out of the comments in the first three sections of the Idealized Model.
5. A role item may be reassigned to or duplicated in another role if the comments demand this.
6. Redundancies may be excised.
7. Minor rearrangements of wording and order of role items may be undertaken without express authority for this from the validators' comments when the aim is to achieve added clarity and coherence.
8. New role items which occur to the revisers during the Stage III process may be added to the role description but are not to be used as part of the

assessment instrument in Stage IV.

9. If the comments in the first three sections warrant changes, additions or deletions to these sections, such changes are to be made.

After the revision process, the role descriptions were rewritten in the light of the comments from the validators. The revised role items are given in Appendix 3.

Stage IV: Assessment of the Differences between the Perceived
Current State of Implementation of the Role Items of CRIB
Project and the Revised Idealized Model of a Fully-
Implemented CRIB Project

In Stage IV an assessment was made of the correspondence between the role descriptions in the Revised Idealized Model (produced in Stage III) and the actual roles being pursued by those personnel and service departments in EPSB system who are or should be (according to the Revised Idealized Model) involved in CRIB Project. More than at any of the earlier stages there was a need for a reconciliation between the demands of the evaluative component of the study and the methodological component. The different pressures of these two factors on the design and execution of the Stage IV assessment are examined during the discussions on the choice of assessment instrument, its design, the validity of the instrument and the treatment of the assessment findings.

Choice of Type of Assessment Instrument for Use in Stage IV

A complete evaluation of the roles being played by those members of EPSB system who are connected with CRIB Project would involve: (a) observation of the personnel concerned over a period of time by trained observers, (b) elaborate surveys or other data-gathering instruments, (c) in-depth interviews, and (d) detailed perusal of the relevant documents. Early on in the study it became clear that such a complete evaluation would not be possible in this instance. In essence, there are three main reasons for this being so:

1. Limitations on the researcher's time, money and personnel. Since no financial help was being provided by the School Board or other agency, the entire resources of the evaluation were those of the writer with assistance from his advisor.

2. Limitations of time and effort on the part of those members of EPSB system whose roles were being evaluated. The writer and his supervisor were informed that since cooperation in the research would be voluntary, it would be politic to keep any investigations short and as non-threatening as possible. Other limits imposed by EPSB system on follow-up procedures will be discussed under "Design of the Questionnaires".

3. Limitations because of the purpose of the study. Since one of the purposes of the study is to develop a technique of evaluation applicable to the assessment of the level of implementation of required role items of middle-budget programs in general, it is inappropriate to think in terms of massive expenditures of time, money and personnel which would not be available in the evaluation of

such programs. More important is to aim for maximizing the efficiency of a relatively inexpensive assessment.

A perusal of the literature on available methodologies which escape these limitations ruled out participant observation, widespread individual interviews and any kind of transactional evaluation. The methods remaining were the survey techniques of the scheduled interview and the mail questionnaire. Each of these techniques has both advantages and disadvantages over the other.

Advantages of the Questionnaire over the Structured Interview

1. There is no danger that the characteristics of an interviewer will influence the responses.
2. The privacy of the mail questionnaire lessens the societal and personal stresses which may force the respondent to attempt to preserve his or her self-esteem in conflict situations by giving false information.

Advantages of the Structured Interview over the Mail Questionnaire

1. An interviewer is on hand to clear up any misunderstanding or confusion in the mind of the respondent concerning what response is required of him or her.
2. An interviewer can become attuned to cues which might indicate further areas for fruitful probing.

Since Stage IV of the study is a type of evaluation, with all the attendant stresses of an evaluation, it was felt that the questionnaire was to be preferred to the structured interview. This was obviously a judgement, and, as Galtung (1967) says:

It is difficult to develop a good theory for where the compromise should be, . . . but since interview, however well done, has elements of both the examination ("did I give the true answer?") and the trial ("did I give the right answer?") the interviewer will appear very much like the well-known authority roles of the teacher and the judge.

Validity of the Questionnaires

Before the worth of the data collected by any questionnaire can be assessed, two important questions need to be answered:

1. Do the items on the questionnaire measure what they are supposed to measure?
2. How can the researcher be sure that the responses are as accurate and truthful as they can be, within the restrictions of the methodology?

The first question addresses Content Validity or the degree to which the instrument measures the class of situations about which the conclusions are to be drawn. The questionnaires in this study consisted of questions based on the role descriptions validated in Stage II and revised in Stage III. In fact, as is described on p.55, these role description items were turned directly into the questionnaire items. The resultant questionnaires are presented in Appendix 4.

As a consequence of this manner of proceeding, the questionnaires which were devised around these role descriptions were felt to have high face and sampling validity. Face and sampling validities are the two main components of content validity. Face validity is a measure of what an instrument appears, on the basis of

a subjective evaluation, to measure. Sampling validity is explained by Helmstadter (1970) as being concerned with "whether a specifically defined universe of behavior is adequately sampled by the test in question." (p. 298) In this instance, the universe of behavior was the itemized role descriptions and since all of these items were included in the questionnaires, the issue of sampling does not arise.

The second question addresses a problem of human behavior. How can a researcher know that the respondent is not overtly or covertly colouring his answers to the questionnaire? The commonly accepted causes of distortion in questionnaire responses are:

1. Distortion due to the desire to appear socially respectable. Parry and Crossley (1950) found that respondents gave inflated estimates of the extent of their financial contributions to charity, and whether or not they had voted in an election, but they gave more valid data on such questions as whether they had a current library card, driver's license, telephone, and so on.

2. Distortion due to efforts, both conscious and subconscious, to achieve maximum advantage in an evaluation situation. This form of distortion derives from a similar motivation as does the first type. Measures to combat, or at least bring to light these forms of distortion, are the same and so will be treated together.

The only way to be sure that such distortions are not happening is to be able to make an independent check on the accuracy

of the data. Among the techniques for accomplishing this check are (i) the observing of the role holders as they perform their roles and seeing if the independent observation coincides with the rating on the questionnaire, (ii) the asking of colleagues and others for their impressions of the role holder's performance, and (iii) the consulting of documentary sources such as reports and memoranda in order to seek confirmation of the role holder's assessment of his performance. In the present study the first two methods were not available: ethical considerations precluded the second and financial considerations the first. There were occasions where documentary evidence could be found and in those instances it was used. For example, it is on record which teachers have written materials for CRIB Project and to what extent. If other teachers maintain that they, too, have written materials for the Project, this would be easy to notice and hence doubt would be cast on the veracity of the respondent.

3. Distortion due to variation in conditions of questionnaire completion. Here the concern is with variation due to such factors as when the questionnaire was completed, how rushed for time the respondent was, and what the respondent's frame of mind was at the time. This form of distortion is considered important in attitude surveys where the respondent's attitudes may indeed change under different circumstances. Short questionnaires help to mitigate this source of distortion. It is not considered a major factor in the present study since attitudes as such are not being measured.

4. Distortion due to the format of the questionnaire. Here

the concern is with such phenomena as response sets (where a respondent tends to answer habitually in one category regardless of the question he is answering) or reaction to reactive questions ("Did you see this advertisement?" usually elicits a positive response even if the respondent did not see it at all, according to Parten, 1950). In the present study the questionnaires were short, thus reducing the possibility of response sets (which tend to set in with boredom); also, there was no logical order to the role items and this procedure also reduced the chances of response sets. There was, however, the possibility that some of the items might be perceived by some of the respondents as being leading questions to some extent and this remains a limitation of the first task on the questionnaires which required respondents to rate their level of implementation of role items on a four-point scale. In the second task, respondents were asked to rank the importance of the role items to a fully-implemented CRIB Project (the details are given in "Design of the Questionnaire"). Ranking was used rather than rating because it would have been too tempting for a respondent to say that all of the role items would be very important for a fully-implemented CRIB Project. Mouly (1970) suggests that ranking in such situations as the present one does avoid an artificially high response to role items that might be construed as being socially respectable or worthy.

Design of the Questionnaire

The Edmonton Public School Board (EPSB) system allows researchers generous access to its employees. However, employee participation in research activities is voluntary. In order to

promote successful research investigations, care is taken to limit the demands made by external researchers on EPSB system personnel. As a result, the following limits were placed by EPSB system on the distribution and number of the Stage IV instruments:

1. The distribution of the initial questionnaire to the sample and only one follow-up letter to non-respondents would be allowed.

2. No investigation of non-respondents, by telephone or other means, in order to ascertain if they differed significantly from respondents, would be permitted.

3. No subsequent questionnaires concerning any other aspect of this study would be permitted.

4. No information concerning the work habits, efficiency, or personal information of any individual would be allowed to be solicited from any other individual.

Because of these restrictions certain design features of the questionnaires became important. Since one of the principal sources of mail questionnaire invalidity lies in the lack of information of the non-respondents, care had to be taken that the circumstances for a high rate of return were propitious. In essence, this meant keeping the questionnaires both short and interesting. In this way it was hoped to achieve a return rate of 70 to 80% by using the one follow-up questionnaire and covering letter which was allowed. This percentage range is a compromise between the 50 and 60% return usually quoted as being an appropriate expectation and the "at least 80 to 90%" which Kerlinger (1964) and others advocate as

being the figure above which the researcher need not be too concerned that the remaining non-returned information would significantly alter his results.

Accordingly, the questionnaire was limited to only three tasks. The first two tasks pertained to the role items which had been described in the Revised Idealized Model of a fully-implemented CRIB Project and the third allowed for free response. For the first two tasks the role items were turned into questionnaire statements by changing the action verb to the first person singular. Thus, the role item for the Supervisor of Science and Health: "He should bring to the attention of the Project staff new science materials" became the questionnaire statement: "I have been and/or am bringing to the attention of the Project staff new science materials." Since the order of the role items in the Stage III Revised Idealized Model was often a logical sequence, the items in the questionnaires were randomly ordered to reduce the possibility of response sets. In all, eighteen questionnaires were developed in this way, corresponding to the eighteen positions in EPSB system whose roles were described in Stage III. Appendix 4 comprises the questionnaires and the covering letters which accompanied them. When compiled, the questionnaires were checked by the Director of Research, EPSB, and a member of the Department of Educational Administration, University of Alberta, to see if any ambiguities were evident in the instructions or the items.

Task 1 of the questionnaires concerned the current level of implementation of the role items for personnel involved with CRIB

Project. The respondent was asked to consider each role item and rate with a check the level of attention given by him or her to the role item for his or her position in EPSB system. There were four response categories: High, Medium, Low and Not at All.

Task 2 of the questionnaires concerned the importance of these role items in a fully-implemented CRIB Project. The respondent was asked to rank the roles from high to low in the order of relative importance for his or her position assuming that CRIB Project had been fully implemented.

Task 3 was a free response opportunity for the respondent to comment on:

a) The appropriateness of the role items to the position held.

b) The conditions required which are presently available and are necessary for role attainment, and

c) The conditions required and which are presently not available that would be necessary for role attainment.

The Sample

All members of EPSB system who were holders of one of the eighteen positions described in the Revised Idealized Model were surveyed. The composition of the survey is shown in Table 3.

Procedure

Every member in the sample was mailed a questionnaire corresponding to the position he or she currently held. If a

Table 3

Personnel of Edmonton Public School Board Surveyed by Stage IV
Questionnaire to Assess the level of Implementation of CRIB Project

Stage II, Section 4, Number	Position in EPSB System	Number in Position or Service
1.	Associate Superintendent of Curriculum	1
2.	Assistant Superintendent, Curricular Services	1
3.	Assistant Superintendent of Research and Evaluation	1
4.	Director of Curriculum Development	1
5.	Director of Curriculum Supervision	1
6.	Director of Professional Development	1
7.	Director of Research	1
8.	Director of Evaluation	1
10.	Directorate of Information Systems	5
11.	Director of Pupil Assessment	1
12.	Supervisor of Science and Health	1
13.	Personnel in Instructional Media Centre	3
14.	Personnel in EPSB Library System	3
15.	Specialists in Reading, Language and Mathematics	3
16.	Administrative Staff of Junior High Schools	88
21.	Junior High School Teachers	141
31.	Director of CRIB Project	1
32.	Curricular Associates in Science	5

curricular associate, say, also taught junior high school science, he or she would be sent the questionnaire for curricular associates and not the one for teachers, since the EPSB system title was "Curricular Associate". With the questionnaire was a letter of instruction, a covering letter from the Director of Research and the Supervisor of Science and Health encouraging participation in the study, an appendix detailing a brief history and the objectives of CRIB Project and a self-addressed envelope. Each questionnaire was identified only by a code number to ensure confidentiality. After two weeks, another package was sent to non-respondents. This consisted of the appropriate questionnaire and appendix but a different covering letter. Once again a self-addressed envelope was enclosed. The questionnaires are listed in Appendix 4.

Utilization of the Results of the Evaluation

The questions of validity which have been discussed above reflect the concern of the study to obtain information which is accurate enough to be used as a basis for the assessment of the state of implementation of CRIB Project, measured in terms of personnel participation. There is another concern and that is to ensure that any decisions which are made concerning the further implementation of CRIB Project are made by decision-makers who are aware of the assessment results and are already sensitized to the issues involved in any further implementation process. The concern, then, is with the utilization of the results of the evaluation.

If decisions concerning CRIB Project are going to be made,

then they will be made either on the basis of the worth and potential of the Project, compared to other projects, or on political grounds, such as diverting resources into educationally fashionable projects or appeasing other subject areas by allocating to them resources now spent on CRIB Project. (The decisions can, of course, be made on a combination of these two extremes.) Much as an evaluator would like to think that his evaluation results are sure to lead to the indicated changes, he is rarely safe in doing so. His task is to endeavour to arrange that the evaluation results do in fact figure heavily in any decisions that are to be taken on the further implementation of the Project. The present study attempts to achieve this goal for CRIB Project by accepting the notion that the task of evaluation is to provide information to decision-makers and it seeks to ensure that the information supplied is of the appropriate kind. It further tries to prepare the decision-maker for receiving the information in such a way that there is the best possible match between the information sought and the information provided. Its way of doing this is by involving the decision-makers in the assessment of the program. The logic of this approach is that since the decision-makers are, naturally, going to make the decisions about the further implementation of CRIB Project, they have become part of the problem of how to achieve further implementation, if this is what the study shows to be desirable. They cannot be left out of the study, any more than the users or the maintainers of the Project can be left out. Once it has been shown that their presence in the study is legitimate and indeed essential for its completeness, the problem becomes one of alerting the decision-makers

to the issues involved. Customarily, this is a task that begins only when the evaluation is complete, and that may be too late. In the present study, however, the awareness of the Project should be growing in the minds of the decision-makers from Stage II validation to Stage IV assessment right through the reading of the final report. They have even contributed to the final report by their input to the Revised Idealized Model. This is not to say that the aim of the study is to manipulate subliminally the decision-makers so that they take the decisions which the evaluator would like them to take. Nor is it an attempt to suggest that the decisions be made only within the context of the evaluation report; such a way of operating would deny the importance of other inputs into the decision-making process. An example of another necessary input would be the financial considerations which are not mentioned at all in this study. The hope is that the importance of the evaluation results in the decision-making process will be increased to its legitimate standing. The results of the evaluation are not to be the only basis of decision-making, but they should be an important basis.

Analysis of Stage IV Assessment Data

Each of the questionnaires consisted of three tasks. There was a total of eighteen questionnaires, corresponding to the roles of EPSB system personnel which were deemed to be those which would be functioning in a fully-implemented CRIB Project. In those instances where there was only one role-holder, there was, of course, a unique questionnaire ("single-respondent questionnaire") and the analysis

is different in these cases from those cases where there was more than one role-holder ("multiple-respondent questionnaires").

Task 1 of Multiple-Respondent Questionnaires. The numbers of respondents to each of the seven multiple-respondent questionnaires who answered in each of the response categories were counted. From these tallies a total score of perceived current level of implementation of each role item was obtained by scoring the response categories on a scale of 1 to 4. A rank order for the role items of the highest perceived current level of implementation to the lowest was derived from the scores. The role item earning the rank of 1 was that which was perceived by the respondents as being currently the most implemented. Specifically, the research question to be answered was:

What is the rank order which ranks the extent of perceived current implementation of the role items ascribed to the respondents' position in EPSB system as being necessary for a fully-implemented CRIB Project?

Task 2 of Multiple-Respondent Questionnaires. The responses to the ranking task on the importance of the role items for a fully-implemented CRIB Project were analyzed for each of the seven questionnaires which were sent to more than one person. The individual rankings were converted to an overall ranking for these role items. Specifically, the question to be answered was:

What are the rank orders of the role items for each of the multiple-respondent questionnaires in order of importance to a fully-implemented CRIB Project, as ranked by the role holders?

With the information from the first two tasks, it was possible to identify areas of congruence and incongruence between

the perceived current level of implementation of the role items with the measure of importance they had been given for a fully-implemented CRIB Project.

Task 3 of Multiple-Respondent Questionnaires. The free responses to the appropriateness of the role items to the role holder were collected and a general statement was made on the respondents' opinions of role appropriateness. The free responses concerning the conditions necessary for role attainment which are or are not currently available were summarized and helped in suggesting reasons for any discrepancies between perceived current implementation and the full implementation of the role items.

Analysis of Single-Respondent Questionnaires. Because of the restriction of confidentiality of response, discrepancies cannot be analyzed and reported as described above. Accordingly, the recipients of these questionnaires were grouped into three classes based on the similarity of their involvement with CRIB Project. The first group consisted of those of Director rank or above who currently are considered as facilitators of the Project. The second group consisted of those below Director rank who are currently involved with CRIB Project. The third group consisted of those who are currently not involved with CRIB Project but whom the Idealized Model identified as being necessary for a fully-implemented CRIB Project. For each of these groups a general statement was made which indicated the perceived current level of implementation of the role items and the importance attributed to each of them for a fully-implemented CRIB Project.

Recommendations

After the results of the study had been discussed in Chapter 5, a series of recommendations was compiled. The aim of these recommendations was to indicate ways in which a more complete level of implementation of the role items deemed necessary by the Idealized Model of a fully-implemented CRIB Project could be attained.

CHAPTER 4

RESULTS

In this chapter the findings of the study will be presented. Each of the four stages of the study will be treated in the order in which they were carried out.

Stage I: Development of an Idealized Model of a Fully-Implemented CRIB Project

The development process which culminated in the production of the Idealized Model used in this study has been described in Chapter 3. The Idealized Model is given in Appendix 1. In a sense, this model comprises the results of Stage I. It was divided into four sections, each successive section representing a progressively sharper focus on to the roles of the personnel who should be involved in a fully-implemented CRIB Project. The fourth and final section of the model is a series of itemized role descriptions of the participants in a fully-implemented CRIB Project. It was these descriptions which, after revision in Stage III, constituted the items in the questionnaires of Stage IV.

Stage II: Validation of the Idealized Model

In order to validate the Idealized Model so that it would more accurately and realistically reflect how a fully-implemented CRIB Project would look if all the Project objectives were being fully met, the Idealized Model was sent to 50 members of Edmonton

Public School Board (EPSB) system who had been or still were actively involved in the development and implementation of CRIB Project or who were involved in the implementation and evaluation of curriculum innovations in general for the EPSB system. Their task was to validate the Idealized Model by suggesting ways in which it could be changed to reflect more accurately and realistically a fully-implemented CRIB Project.

Half the number of models went to personnel in the schools and half went to Central Office personnel. Of the 25 Idealized Models sent to personnel in the schools, 23 were returned completed. This represents a 92% rate of return. Of the 25 Idealized Models sent to personnel in Central Office, 21 were returned. Three validators in one department collaborated on one return, thus making the effective rate of return 23 out of 25 or, once again, 92%.

There was a tremendous wealth of material contained in the validators' responses to the Idealized Model. Since the responses to Section 4 of the Model, the role descriptions, were fundamentally different to the comments on the first three sections of the model, they will be dealt with separately.

Responses to Sections 1, 2 and 3 of the Idealized Model

The comments to each section will be considered in turn under the major division into comments made by validators in the schools and comments made by validators in Central Office.

Comments on Section 1. Section 1, "CRIB Project is Located", was a survey of the literature designed to set CRIB Project in the context of current thought on the implementation of educational

innovations and on the development of curricula.

The Schools validators made only 23 comments on Section 1. These are shown in Table 4 where they have been grouped into broad categories. The comments were mainly of a general nature and tended to reflect personal and idiosyncratic views of the validators. The largest category of comments concerned the involvement of teachers in CRIB Project and the eleven comments indicate that the current level of involvement of teachers is seen by these validators as being inadequate.

The Central Office validators made only twelve comments on this section. These are shown in Table 5. As with the Schools validators, no definite pattern emerges. One suggestion, that of in-service training for teachers, was made twice.

The comments of both groups suggest that at this stage of reacting to the Idealized Model most validators were expressing their perceptions of current deficiencies in the operation of CRIB Project rather than addressing the implications of and requirements for a fully-implemented CRIB Project.

Comments on Section 2. This section, "CRIB Project is Defined", concentrated on isolating and examining concerns and problems which become evident when ways are sought of implementing more fully the objectives of CRIB Project.

The Schools validators made 21 comments to this section. These are shown in Table 6 grouped into two categories. At this stage, the validators began to provide more suggestions on the means for achieving a fully-implemented CRIB Project. Teacher in-service programs are mentioned twice and other suggestions, such

Table 4

Comments by Schools Validators to Section 1 ("CRIB Project is Located") of the Stage II Validation of the Idealized Model

Comments concerning the operation and usage of CRIB Banks:

CRIB is becoming a text book
 More alternatives need to be in banks
 If poor teachers use CRIB as a lesson plan, then the whole concept is questionable
 Field testing should be carried out on new materials
 Materials are not graphic enough
 A "methodologies" bank should be developed

Comments concerning teacher involvement in CRIB Project:

Not enough science educators have contributed to CRIB
 Too many teachers are unaware of CRIB philosophy - especially principals
 CRIB is used more in classrooms where teacher was a writer
 It is not true that non-CRIB teachers feel inferior
 Reward is essential for teacher involvement
 Training new teachers to write materials takes time and money but is very desirable
 Lack of teacher involvement has severely hampered acceptance
 Not enough dollars for participation
 Not wide enough emphasis being made on using the full scope of CRIB materials
 Writers need to be spread about
 More inservice required

Comments concerning the Idealized Model itself:

Good background
 Section 1 would serve as an introduction to those requiring knowledge of CRIB

Comments concerning Central Office relationships and the need for the promotion of CRIB Project:

CRIB needs a salesman to sell it to upper administration
 Continued p.r. is needed
 More exposure and advertising is essential to encourage CRIB use

Table 5

Comments by Central Office Validators to Section 1 ("CRIB Project is Located") of the Stage II Validation of the Idealized Model

Comments concerning operation and usage of CRIB banks:

Mechanical difficulties have hindered modifications to CRIB
 Teachers don't appear to be able to use CRIB to best advantage. Gatekeepers and facilitators have not provided sufficient direction to teachers using materials
 Are (computer) terminals the only solution?
 Possible use of computer terminals for item bank access are contained in I.S.B. Report, Dec. 1975. In this report it appears that administrators tend to place low priority on instructional uses

Comments concerning teacher involvement in CRIB Project:

New staff need inservice early
 Has inservice lagged?
 Project is very people-dependent. Therefore difficult to implement

Comments concerning the Idealized Model itself:

Agree with CRIB Project but questionnaire is biased
 Some comment should be made on learning styles
 Whole exercise is a farce
 Facilitators are over-simplified in model

Comments concerning Central Office relationships and need for promotion of CRIB Project:

High level personnel don't know about CRIB

Table 6

Comments by Schools Validators to Section 2 ("CRIB Project is Defined") of the Stage II Validation of the Idealized Model

Prescriptive comments and suggestions:

Teacher feedback must be increased
 Be careful that coercion is avoided
 Are newsprint printouts feasible?
 More teachers should be encouraged to write (materials)
 Best choice for feedback would be "jam sessions" for teachers
 Hopefully project will meet needs of pupils
 More inservice needed for new teachers
 Beginning teachers need inservice
 CRIB should be introduced in C.I. Courses
 Reproduction is very important - must be efficient
 Teachers should be obliged to comment critically
 Teachers don't recognise importance of contributions

General comments and comments asking for information:

Would CRIB, if it met all its objectives, not lose the sense of worth it has for individuals now?
 Some teachers want no part of CRIB writing
 What is teacher "style"?
 Is CRIB too expensive for any one system?
 Are there terminal printers which do diagrams and pictures?
 C.A.I. is another ball-game - not part of CRIB
 Central Office provides little or no help to CRIB
 Principals play no part in CRIB
 C.A.'s do nothing about feedback

as introducing CRIB Project in University curriculum courses and encouraging teacher feedback, are mentioned. The second group of comments reflect some concerns of the validators such as the cost of the program and areas of insufficient contribution such as the Principals of schools and Central Office personnel.

The Central Office validators provided six comments. These are shown in Table 7. Once again, these comments seemed to be directed towards means of achieving a fully-implemented CRIB Project. Suggestions for increasing teacher contributions and for achieving successful implementation were made.

It would appear that both groups of validators were beginning to appreciate that they were required to react to an Idealized Model of a fully-implemented CRIB Project and that their comments were directed towards ways of achieving this end.

Comments on Section 3. This section, "CRIB Project is Examined", dealt with the linkages between the various components of an Idealized Model of a fully-implemented CRIB Project.

The validators from the schools provided seven comments to this section. These are shown in Table 8. Three of the comments were addressed to the schematic representation of a fully-implemented CRIB Project (Appendix 1, p. 61) The remainder of the comments tended to be of a general nature and reflected such concerns as the costs of implementation.

The validators from Central Office also provided seven comments. These are shown in Table 9. Only two of these comments were addressed to the Section 3 schematic representation and the others were more general in nature. No inferences can be drawn from

Table 7

Comments by Central Office Validators to Section 2 ("CRIB Project is Defined") of the Stage II Validation of the Idealized Model

Prescriptive comments and suggestions:

Grave danger that "helpful guidelines" will become confining.
(Materials) must continually be revised and expanded
Microfiche not too good an idea
Increase teacher writing by contract work
Test and measurement people will be most useful if they are
involved in long-range planning
Updating, improving and expanding should be a systematic change
Main barriers to successful implementation: financial restraints,
priorities of future computer applications, lack of familiarity
of key decision-makers with CRIB

Table 8

Comments by Schools Validators to Section 3 ("CRIB Project is Examined") of the Stage II Validation of the Idealized Model

Comments on roles and the Section 3 scheme of the Idealized

Model:

Staff and money will be of paramount importance

Director must be full time

Weakest link is between facilitators and developers

There should be links between facilitators and other banks in other systems

There should be links between CRIB Director and other school systems administrations

Other comments:

CRIB has many good points but is not the final word in curriculum

Costs of implementation are mind-boggling

Table 9

Comments by Central Office Validators to Section 3 ("CRIB Project is Examined") of the Stage II Validation of the Idealized Model

Comments on roles and the Section 3 scheme of the Idealized Model:

Director as motivator is essential
 School learning resource centre teacher should be facilitator
 in schools

Other comments:

What about ACCESS personnel as producer of materials?
 A lot of dollars have been spent - see if CRIB has had an effect
 Organization must be clear, consistent and effective
 What is needed is the systematization of CRIB approach
 Usage statistics can be generated

the limited comments given.

Both the Schools and Central Office sets of validators did not respond very much to Section 3. One reason for this could be that the validators were saving their contributions for Section 4, the questionnaire section, and did not wish to duplicate their comments in Section 3. Perhaps they felt that the schematic representation was sufficiently accurate for a fully-implemented CRIB Project. Whatever the reason, the paucity of comments meant that no revisions to this section of the Idealized Model were made on the basis of validator input.

Analysis of Responses in Section 4 of the Idealized Model

In Section 4, "CRIB Project is Dissected", itemized descriptions were given of the roles which should be played by those individuals and service departments whose participation was deemed necessary by the Idealized Model for the implementation and subsequent smooth running of a fully-implemented CRIB Project. A questionnaire format was used to elicit responses.

The analysis of the replies to Section 4 is divided into:
(a) Tallies for the responses to the role items, and (b) An analysis of the additional information written by the validators in the 742 comments they provided. Since the latter analysis forms the substance of Stage III of the study (Revision of the Idealized Model) only the tallies will be analyzed here.

The validators were required to signify their level of agreement to individual role items by checking one of five responses: "Agree Absolutely", "Agree BUT...", "Undecided BECAUSE...",

"Disagree BECAUSE...", and "Lack Required Background." A perusal of the completed Stage II documents indicated that several validators used the "Agree Absolutely" category to indicate pro forma acceptance or mere acknowledgement of the role item in question rather than any considered judgement. The "Agree BUT..." responses indicated that this category had been used with considered judgement. Therefore, the totals for the categories "Agree Absolutely" and "Agree BUT..." have been redistributed into the following two categories:

(a) Agree Absolutely (with no comment)

In this entry are tallied those checks which were made in the category: "Agree Absolutely" and which had no written comment associated with them.

(b) Agree (with comment)

In this entry are included all responses in the "Agree BUT..." category and all those responses in the "Agree Absolutely" category which were accompanied by a comment.

The tally in the second category therefore represents the lower limit of validator agreement reached upon due consideration by the validator of the appropriateness of the role items. It would seem likely that some at least of the responses in Category (a) are indeed the considered judgements of the validators and not simply a pro forma reaction. However, the conservative approach is to take the figure in Category (b) as being a reflection of the validators' agreement with the role descriptions, bearing in mind that the upper limit of agreement is the sum of the tallies in the two categories and the true figure must be somewhere in between.

The response category: "Undecided" was little used by the validators. The response category: "Disagree: BECAUSE..." was also used sparingly and, in the light of the accompaniment of suitable comments, unequivocally. The final column, "Lack Required Background", was not often used but appeared to be used appropriately. There were instances where validators made no mark under a certain role item. These instances were also tallied.

Responses of the Schools Personnel Validators. The tallies of the responses of the 23 Schools validators are given in Table 10. Beside each role item a brief descriptor of it has been given. For the full wording of the role item the reader is referred to Appendix 1, Section 4. The role items numbered from 1 to 16 refer to personnel identified as facilitators; the role items numbered 21, 31 and 32 refer to the users, CRIB Project Director, and Curricular Associates, respectively. In Table 10 the sum of the last five columns (AGREE (Total), Undecided, Disagree, Lack Required Background and No Reply) is always 23 which is the number of Idealized Models returned by the Schools Personnel validators.

The "AGREE (Total)" tally in Table 10 indicates a high level of agreement by the Schools validators with the role items described in the Idealized Model. The median of this tally (median = 20.4) is close to the total number of validators ($N = 23$). It was pointed out that the tally of total agreement may have been inflated by certain validators using the column as a pro forma response. The conservative reaction is to take the tally under "Agree (with comment)" and to assume that all the tallies under "Agree Absolutely (no comment)" are pro forma responses. That this position may be

Table 10

Responses of Schools Validators in Stage II to Section 4 Questionnaire of Idealized Model

Role Item Number	Descriptor (abbreviated)	Agree		AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutely (no comment)	with comment					
<u>Associate Sup't, Curriculum</u>								
1.1	Support CRIB financing	13	8	21	0	0	2	0
1.2	Open lines of commun- ication in EPSB	16	6	22	0	0	1	0
1.3	Communicate CRIB to other systems	9	7	16	4	0	2	1
<u>Assistant Sup't, Curricular Services</u>								
2.1	Coordinate work of Directors	17	3	20	0	1	1	1
2.2	Support CRIB needs for finance	16	4	20	0	0	1	2
2.3	Open lines of communication	16	4	20	0	0	2	1
<u>Assistant Sup't, Research & Evaluation</u>								
3.1	Know accurately how CRIB works	19	1	20	1	1	0	1
3.2	Appreciate dynamic nature of CRIB	17	4	21	0	1	0	1
3.3	Ensure Directors are sympathetic to CRIB	17	3	20	0	1	0	2

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree		AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutely (no comment)	With comment					
<u>Director of Curric. Development</u>								
4.1	Support CRIB financing	15	6	21	0	0	0	2
4.2	Open lines of communication in EPSB	16	3	19	0	0	1	3
4.3	Monitor continued well-being of CRIB	9	5	14	2	3	1	3
4.4	Ensure CRIB objectives continually reviewed	12	5	17	1	2	1	2
4.5	Ensure CRIB moves with moving objectives	13	7	20	0	0	1	2
4.6	Cooperate with others to increase CRIB value	17	3	20	0	0	1	2
4.7	Ensure appointment of good personnel	16	1	17	1	4	0	1
4.8	Incorporate CRIB into other subject areas	8	7	15	3	2	1	2
<u>Director of Curriculum (Program) Supervision</u>								
5.1	Encourage increased use of banks	15	4	19	0	0	3	1
5.2	Set up lines of communication bet. users and CRIB	12	6	18	1	1	2	1
5.3	Cooperate with others to increase CRIB value	18	2	20	0	0	1	2

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	Agree with comment	ACREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Director of Prof- fessional Development</u>								
6.1	Encourage teachers to attend writing sessions	15	3	18	1	1	1	2
6.2	Encourage Project Director	13	4	17	0	2	2	2
6.3	Cooperate with others to increase CRIB value	18	2	20	0	0	1	2
<u>Director of Research</u>								
7.1	Support CRIB needs for finance	15	4	19	1	0	1	2
7.2	Communicate CRIB to other school systems	13	1	14	4	2	1	2
7.3	Try to extend CRIB concept to other areas	13	1	14	4	1	2	2
<u>Director of Evaluation</u>								
8.1	Collect data to depict current state of CRIB	12	2	14	1	4	2	2
8.2	Monitor implementation of CRIB	15	0	15	0	2	3	3
8.3	Assess impact of CRIB on student learning	14	4	18	0	1	2	2

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	with comment	AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Director of Educational Data Processing</u>								
9.1	Assess extent of bank material use	12	2	14	0	0	6	3
9.2	Arrange for evaluation of CRIB	11	2	13	0	1	6	3
<u>Directorate of Information Systems</u>								
10.1	Understand need to computerize CRIB	11	3	14	1	1	6	1
10.2	Awareness of curricular applications of computer	12	3	15	0	1	6	1
10.3	Propose computer for CRIB purposes	16	1	17	0	0	5	1
10.4	Prepare specifications of computer system	9	3	12	1	2	6	2
10.5	Prepare estimates of CRIB move to computer	14	1	15	0	1	4	3
10.6	Develop computer use of CRIB materials	7	2	9	0	2	7	5
10.7	Screen use of materials by teachers	12	3	15	1	0	3	4
10.8	Work with others to program CRIB evaluation	13	1	14	0	0	4	5

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated.)	Agree absolutely (no comment)	Agree with comment	AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Director of Pupil Assessment</u>								
11.1	Monitor progress of students	11	5	16	0	1	3	3
11.2	Design study to measure CRIB contribution	6	10	16	0	2	3	2
11.3	Measure how CRIB alters student attitudes	6	8	14	0	3	3	3
11.4	Relay results to CRIB Director	9	5	14	1	2	3	3
11.5	Help mesh student and CRIB records	8	3	11	2	0	4	6
<u>Supervisor of Science and Health</u>								
12.1	Function as mediator between staff and C.O.	14	3	17	0	2	1	3
12.2	Provide ideas and new directions for CRIB	14	6	20	1	0	0	2
12.3	Integrate CRIB with other science programs	15	5	20	0	0	1	2
12.4	Inform Project staff of new ideas in science	19	2	21	0	0	0	2
12.5	Initiate contact with other systems	14	5	19	2	1	1	0
12.6	Ensure bank materials are current	15	4	19	1	1	0	2

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	with comment	AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Personnel in I.M.C.</u>								
13.1	Be aware of materials used in banks	15	6	21	0	2	0	0
13.2	Be aware of materials required by CRIB	16	7	23	0	0	0	0
13.3	Inform CRIB Director of new materials	18	4	22	0	0	0	1
13.4	Tell CRIB Director of newly available texts	19	3	22	0	0	0	1
13.5	Inform CRIB Director if materials unavailable	20	2	22	0	0	0	1
13.6	Work with other Directors to computerize	10	4	14	1	1	4	3
<u>Library Personnel</u>								
14.1	Be aware of materials used in banks	11	9	20	0	2	0	1
14.2	Be aware of materials required by CRIB	13	7	20	0	0	0	3
14.3	Inform CRIB Director of new materials	16	4	20	1	0	1	1
14.4	Tell CRIB Director of newly available texts	16	5	21	0	0	1	1
14.5	Inform CRIB Director if materials unavailable	16	3	19	0	2	0	2
14.6	Work with other Directors to computerize	15	3	18	0	1	1	3
14.7	Make bank references available in schools	11	8	19	0	1	0	3

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	with comment	ACREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Specialists in Reading, Language & Mathematics</u>								
15.1	Evaluate newly written CRIB materials	14	8	22	0	1	0	0
15.2	Evaluate materials now in the banks	12	8	20	0	1	1	1
<u>Principals of Schools</u>								
16.1	Be aware of existence of CRIB	22	1	23	0	0	0	0
16.2	Be familiar with CRIB rationale	21	2	23	0	0	0	0
16.3	Understand how CRIB helps teachers	17	5	22	1	0	0	0
16.4	Understand teachers' need for writing sessions	22	1	23	0	0	0	0
16.5	Understand need for release time	15	7	22	0	1	0	0
16.6	Facilitate provision of release time	13	8	21	0	2	0	0
16.7	Be aware of their effect on innovation adoption	18	2	20	1	0	0	2
16.8	Encourage non-users to become users	11	9	20	1	1	0	1

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree		AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutely (no comment)	with comment					
Teachers								
21.11	Draw on banks to plan lessons	18	4	22	0	0	0	1
21.12	Use materials for individual students	22	0	22	0	1	0	0
21.21	Keep a cumulative record of bank use	10	9	19	1	3	0	0
21.22	Alert CRIB staff to any errors	19	4	23	0	0	0	0
21.31	Notify CRIB staff of new ideas for materials	17	6	23	0	0	0	0
21.32	Attend meetings to promote liaison	14	6	20	1	1	0	1
21.33	Participate in writing sessions	5	14	19	1	1	0	2
Director of CRIB Project								
31.11	Receive and collate feedback on bank use	21	1	22	0	1	0	0
31.12	Organize meetings of teachers	20	3	23	0	0	0	0
31.13	Organize writing sessions out of term	18	4	22	0	0	0	1
31.14	Plan development of bank materials	12	10	22	0	0	0	1
31.15	Receive and collate I.M.C. information	21	1	22	0	1	0	0

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree		ACRREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutely (no comment)	with comment					
31.16	Receive and collate library information	20	0	20	0	2	0	1
31.21	Conduct in-service teacher meetings	13	7	20	1	2	0	0
31.22	Meet with administrat- ors in the schools	13	5	18	0	5	0	0
31.23	Meet with administrat- ors in Central Office	12	8	20	0	3	0	0
31.24	Attend meetings in other systems	15	7	22	0	1	0	0
31.3	Establish lines of communication	15	3	18	0	0	1	4
31.41	Have time to do duties of CRIB Project	15	8	23	0	0	0	0
31.42	Have enough clerical assistance	21	2	23	0	0	0	0
31.43	Have sufficient staff to carry out duties	18	2	20	0	1	1	1
31.44	Be able to use curricu- lar associates to help	13	8	21	0	1	0	1

Table 10 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree		AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutcly (no comment)	with comment					
<u>Curricular Associates</u>								
32.11	Be able to use the banks	22	0	22	0	0	1	0
32.12	Assist teachers having difficulties	23	0	23	0	0	0	0
32.13	Participate in meetings with teachers	21	2	23	0	0	0	0
32.14	Participate in summer writing sessions	12	7	19	1	1	1	1
32.21	Act as a channel for ideas and suggestions	20	3	23	0	0	0	0
32.22	Notify Director of any difficulties	20	3	23	0	0	0	0

Notes: Tallies were compiled from 23 returned Idealized Models

For full descriptions of the Role Items, see Appendix 1, Section 4

unrealistically conservative is indicated by the wide range in tallies under the "Agree absolutely (no comment)" column. The totals range from 23 (Role Item 32.12) out of a maximum of 23 to 5 (Role Item 21.33). This range indicates that Schools validators were prepared to use response categories other than "Agree absolutely" when the need arose. It is impossible to assess the level of pro forma responses in the tally of "Agree absolutely" and therefore it must remain impossible to arrive at an exact measure of total agreement by the Schools validators. This must remain a limitation of the study.

In the interpretation of the results that follows, the responses by the Schools validators to the role items of facilitators (Roles 1 to 16) and to the users and CRIB staff (Roles 21, 31 and 32) will be treated in separate groups. Since the Schools validators were closer to the second group of role items than they were to the facilitators group of role items, differences in responses might be expected when the validators are commenting on the role items in the group more familiar to them than on those in the group less familiar to them.

While it is not possible to infer a total measure of agreement by the Schools validators with the role items, it is apparent that they agreed more with the role items for the users and Project staff than with those for the facilitators group. For the users and Project staff the medians for the tallies under "Agree absolutely (no comment)", "Agree (with comment)", and "AGREE (Total)" were 18.7, 4.3 and 22.4, respectively. The corresponding median measures on the tallies of agreement by the Schools validators for

the group of facilitators (Roles 1 to 16) were 15.0, 4.1 and 19.9.

It appears that very few Schools validators felt undecided about the role items. This held true whether they were commenting on facilitators (median of "Undecided" tallies = 0.8) or on the users and Project staff (median = 0.6). They also disagreed with very few of the role items either for the facilitators group (median of "Disagree" tallies = 1.2) or users and Project staff group (median = 1.0). Schools validators selected "Lack Required Background" more when considering the role items of facilitators (median of "Lack Required Background" tallies = 1.6) than when they were considering the role items of users and Project staff (median = 0.6). The highest use of this category came when the validators were responding to the role items of the Director of Educational Data Processing (Role Items 9.1 and 9.2) and this is quite understandable since this position no longer existed at the time of the study and was therefore presumably unfamiliar to many validators. The other main area where this response was popular concerned the role items of the Directorate of Information Services (10.1 to 10.8). It seems that several validators felt that they did not possess the expertise to comment on these more technical role items.

The tallies by the Schools validators under "No Reply" were also high for the role items on Directorate of Information Services. The role items of the Director of Pupil Assessment (11.1 to 11.5) also received high "No Reply" scores. In general there were considerably more instances of no reply for the facilitators group (median = 2.1) than for the users and Project staff group

(median = 0.8). One explanation of this result may be that indecision or lack of information on the part of a Schools validator may result in no response; this might account for the high level of non-response for the role items (10.1 to 10.8) which elicited a high level of "Lack Required Background" from Central Office validators.

Responses of the Central Office validators. The tallies of the responses of the 21 Central Office validators are given in Table 11. As in the interpretation of the results of the Schools validators, the responses by the Central Office validators to the role items of the facilitators (Roles 1 to 16) and to the users and CRIB Project staff (Roles 21, 31, and 32) will be treated in separate groups. Since the Central Office validators were closer to the first group of role items than they were to the users and Project staff group of role items, differences in responses might be expected when the validators are commenting on the role items in the group more familiar to them than on those in the group less familiar to them.

As in the case of the Schools personnel validators, it was not possible to infer a total measure of agreement by the Central Office validators with the role items. It is apparent, however, that they expressed a higher measure of agreement with the role items for the facilitators group than with those for the users and Project staff group. For the facilitators the medians of the tallies under "Agree absolutely (no comment)", "Agree (with comment)" and "AGREE (Total)" were 11.1, 2.2 and 13.7, respectively. The corresponding median measures on the tallies of agreement by the Central Office validators for the group of users and Project staff (Roles 21, 31,

Table 11

Responses of Central Office Validators in Stage II to Section 4 Questionnaire of Idealized Model

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	with comment	ACREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Associate Sup't, Curriculum</u>								
1.1	Support CRIB financing	10	6	16	0	0	1	4
1.2	Open lines of communica- tion in FPSB	10	4	14	0	1	1	5
1.3	Communicate CRIB to other systems	6	7	13	1	1	1	5
<u>Assistant Sup't, Curricular Services</u>								
2.1	Coordinate work of Directors	13	3	16	0	0	0	5
2.2	Support CRIB needs for finance	8	7	15	0	0	1	5
2.3	Open lines of communication	12	4	16	0	0	0	5
<u>Assistant Sup't, Research & Evaluation</u>								
3.1	Know accurately how CRIB works	13	3	16	0	0	0	5
3.2	Appreciate dynamic nature of CRIB	10	6	16	0	0	1	4
3.3	Ensure Directors are sympathetic to CRIB	12	3	15	0	0	2	4

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	with comment	AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Director of Curric. Development</u>								
4.1	Support CRIB financing	11	3	14	0	0	1	6
4.2	Open lines of communication in EPSB	12	3	15	0	0	0	6
4.3	Monitor continued well-being of CRIB	9	6	15	0	0	0	6
4.4	Ensure CRIB objectives continually reviewed	11	4	15	0	0	0	6
4.5	Ensure CRIB moves with moving objectives	9	4	13	1	0	0	7
4.6	Cooperate with others to increase CRIB value	13	2	15	0	0	0	6
4.7	Ensure appointment of good personnel	12	3	15	0	0	0	6
4.8	Incorporate CRIB into other subject areas	7	1	8	3	3	1	6
<u>Director of Curriculum (Program) Supervision</u>								
5.1	Encourage increased use of banks	11	2	13	0	1	0	7
5.2	Set up lines of communication bet. users and CRIB	6	3	9	0	4	1	7
5.3	Cooperate with others to increase CRIB value	13	1	14	0	0	0	7

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	<u>Agree absolutely (no comment)</u>	<u>with comment</u>	AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Director of Professional Development</u>								
6.1	Encourage teachers to attend writing sessions	9	1	10	2	2	0	7
6.2	Encourage Project Director	7	5	12	0	1	1	7
6.3	Cooperate with others to increase CRIB value	12	1	13	0	0	1	7
<u>Director of Research</u>								
7.1	Support CRIB needs for finance	9	3	12	1	0	1	7
7.2	Communicate CRIB to other school systems	9	3	12	0	1	1	7
7.3	Try to extend CRIB concept to other areas	5	5	10	1	2	0	8
<u>Director of Evaluation</u>								
8.1	Collect data to depict current state of CRIB	11	3	14	0	0	0	7
8.2	Monitor implementation of CRIB	11	3	14	0	0	0	7
8.3	Assess impact of CRIB on student learning	9	5	14	0	0	0	7

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	Agree with comment	AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Director of Educational Data Processing</u>								
9.1	Assess extent of bank material use	5	2	7	1	0	4	9
9.2	Arrange for evaluation of CRIB	11	2	13	0	1	1	6
<u>Directorate of Information Systems</u>								
10.1	Understand need to computerize CRIB	9	2	11	1	2	1	6
10.2	Awareness of curricular applications of computer	10	3	13	0	1	1	6
10.3	Propose computer for CRIB purposes	12	2	14	0	1	0	6
10.4	Prepare specifications of computer system	11	2	13	0	1	1	6
10.5	Prepare estimates of CRIB move to computer	11	3	14	0	1	0	6
10.6	Develop computer use of CRIB materials	11	2	13	0	1	1	6
10.7	Screen use of materials by teachers	10	4	14	0	1	0	6
10.8	Work with others to program CRIB evaluation	11	1	12	0	1	2	6

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	with comment	AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Director of Pupil Assessment</u>								
11.1	Monitor progress of students	11	3	14	0	0	1	6
11.2	Design study to measure CRIB contribution	7	3	10	1	3	1	6
11.3	Measure how CRIB alters student attitudes	5	3	8	2	3	1	7
11.4	Relay results to CRIB Director	9	0	9	2	3	2	5
11.5	Help mesh student and CRIB records	6	3	9	2	2	2	6
<u>Supervisor of Science and Health</u>								
12.1	Function as mediator between staff and C.O.	12	0	12	0	2	1	6
12.2	Provide ideas and new directions for CRIB	11	0	11	0	2	2	6
12.3	Integrate CRIB with other science programs	11	1	12	2	0	1	6
12.4	Inform Project staff of new ideas in science	13	0	13	0	0	1	7
12.5	Initiate contact with other systems	10	3	13	0	1	1	6
12.6	Ensure bank materials are current	13	0	13	0	2	0	6

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree		ACREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutely (no comment)	with comment					
<u>Personnel in I.M.C.</u>								
13.1	Be aware of materials used in banks	12	2	14	0	0	0	7
13.2	Be aware of materials required by CRIB	14	0	14	0	0	0	7
13.3	Inform CRIB Director of new materials	12	2	14	0	1	0	6
13.4	Tell CRIB Director of newly available texts	14	0	14	0	1	0	6
13.5	Inform CRIB Director if materials unavailable	12	2	14	0	1	0	6
13.6	Work with other Directors to computerize	11	2	13	0	1	1	6
<u>Library Personnel</u>								
14.1	Be aware of materials used in banks	9	5	14	0	1	0	6
14.2	Be aware of materials required by CRIB	10	5	15	0	0	0	6
14.3	Inform CRIB Director of new materials	8	4	12	0	1	1	7
14.4	Tell CRIB Director of newly available texts	9	4	13	0	1	0	7
14.5	Inform CRIB Director if materials unavailable	12	2	14	0	1	0	6
14.6	Work with other Directors to computerize	11	2	13	0	1	1	6
14.7	Make bank references available in schools	10	3	13	0	1	1	6

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree absolutely (no comment)	Agree with comment	AGREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
<u>Specialists in Reading, Language & Mathematics</u>								
15.1	Evaluate newly written CRIB materials	10	1	11	0	1	2	7
15.2	Evaluate materials now in the banks	9	2	11	0	2	1	7
<u>Principals of Schools</u>								
16.1	Be aware of existence of CRIB	12	1	13	0	0	0	8
16.2	Be familiar with CRIB rationale	12	1	13	0	0	0	8
16.3	Understand how CRIB helps teachers	6	4	10	0	2	1	8
16.4	Understand teachers' need for writing sessions	10	2	12	1	0	0	8
16.5	Understand need for release time	10	2	12	0	1	0	8
16.6	Facilitate provision of release time	8	3	11	1	1	0	8
16.7	Be aware of their effect on innovation adoption	13	1	14	0	0	0	7
16.8	Encourage non-users to become users	9	4	13	0	1	0	7

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree		ACREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutely (no comment)	with comment					
<u>Teachers</u>								
21.11	Draw on banks to plan lessons	10	5	15	0	0	0	6
21.12	Use materials for individual students	11	4	15	0	0	0	6
21.21	Keep a cumulative record of bank use	3	5	8	1	5	0	7
21.22	Alert CRIB staff to any errors	14	1	15	0	0	0	6
21.31	Notify CRIB staff of new ideas for materials	11	3	14	1	0	0	6
21.32	Attend meetings to promote liaison	10	5	15	0	0	0	6
21.33	Participate in writing sessions	8	7	15	0	0	0	6
<u>Director of CRIB Project</u>								
31.11	Receive and collate feedback on bank use	11	0	11	0	1	2	7
31.12	Organize meetings of teachers	9	1	10	0	0	2	9
31.13	Organize writing sessions out of term	10	1	11	0	0	2	8
31.14	Plan development of bank materials	7	2	9	0	1	2	9
31.15	Receive and collate I.M.C. information	9	1	10	0	0	2	9

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree		ACREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutely (no comment)	with comment					
31.16	Receive and collate library information	9	1	10	0	0	2	9
31.21	Conduct in-service teacher meetings	10	1	11	0	1	1	8
31.22	Meet with administrators in the schools	9	0	9	0	1	1	10
31.23	Meet with administrators in Central Office	9	2	11	0	1	1	8
31.24	Attend meetings in other systems	10	1	11	0	1	1	8
31.3	Establish lines of communication	9	1	10	0	0	1	10
31.41	Have time to do duties of CRIB Project	10	1	11	0	1	1	8
31.42	Have enough clerical assistance	10	1	11	0	1	1	8
31.43	Have sufficient staff to carry out duties	8	3	11	0	1	1	8
31.44	Be able to use curriculum associates to help	8	3	11	0	1	1	8

Table 11 (continued)

Role Item Number	Role Item Descriptor (abbreviated)	Agree		ACREE (Total)	Undecided	Disagree	Lack Req'd Background	No Reply
		absolutely (no comment)	with comment					
Curricular Associates								
32.11	Be able to use the banks	14	0	14	0	0	1	6
32.12	Assist teachers having difficulties	14	0	14	0	0	0	7
32.13	Participate in meetings with teachers	14	0	14	0	0	0	7
32.14	Participate in summer writing sessions	9	3	12	2	0	0	7
32.21	Act as a channel for ideas and suggestions	13	0	13	0	0	0	8
32.22	Notify Director of any difficulties	13	0	13	0	0	0	8

Notes: Tallies were compiled from 21 returned Idealized Models

For full descriptions of the Role Items, see Appendix 1, Section 4

and 32) were 10.3, 1.8 and 11.8.

Very few Central Office validators appear to have felt undecided about the role items. This held true whether they were commenting on the role items of the facilitators (median of "Undecided" tallies = 0.6) or on the role items of the users and Project staff (median = 0.5). They also disagreed with very few of the role items either for the facilitators group (median of "Disagree" tallies = 1.2) or for the users and Project staff group (median = 0.8). Central Office validators selected "Lack Required Background" to a comparable extent both when considering the role items of the facilitators (median of "Lack Required Background" tallies = 1.0) and when considering the role items of users and Project staff (median = 1.2). There were never more than two Central Office validators using "Lack Required Background" response for any one role item.

The tallies by the Central Office validators under "No Reply" were appreciable. There were more non-replies for the users and Project staff group of role items (median = 8.2) than for the facilitators group (median = 6.8). The reason for the frequency with which no reply was obtained was largely due to five Central Office validators who commented only on their area of expertise and left the remainder of the questionnaire incomplete.

Comparison between tallies from responses of Schools validators and Central Office validators. One tentative finding is that both sets of validators agreed more with the role items closest in experience to themselves. Thus the Central Office

validators expressed higher agreement with the roles of the facilitators (Roles 1 to 16) than they did with the roles of the users and Project staff (Roles 21, 31 and 32) and the Schools validators expressed higher agreement with the roles of the users and Project staff than with the roles of the facilitators. One possible explanation could be that the role descriptions in the Idealized Model reflected the perceptions of those validators nearer to the roles but that the validators themselves had erroneous or differing impressions of the roles further away from their position in the EPSB system. However, the differences in the medians are not statistically significant at $\alpha = 0.05$ and so no legitimate conclusions may be drawn. In comparisons of all the tallies from responses of Schools validators and Central Office validators, no pair of median measures were found to be statistically significant at $\alpha = 0.05$.

Stage III: Revision of Idealized Model

When all the available copies of the Idealized Model had been returned by the validators, a panel of revisers examined them for the comments which had been made. The panel consisted of the present writer and his doctoral studies supervisor. For the first three sections of the returned documents (the three descriptive sections) the comments were entered on a grid labelled by section and by validator. For the fourth section, the questionnaire on the role descriptions, the comments were entered on a second grid labelled by role item number and by validator. These latter

comments are found in Appendix 2; the identities of the validators, which were known to the panel during Stage III, have not been given in order to protect confidentiality. In the light of these comments, and according to the rules which were established (See Chapter 3, p.45), the role items were revised. The resulting revised role descriptions are given in Appendix 3. Where a number appears in parenthesis after a role item in Appendix 3, it is the number of the item in the original Idealized Model (Appendix 1, Section 4) which relates most closely to the revised role item. Several additional role items occurred to the panel during the revision process; these have been included in Appendix 3 in the hope that they may prove useful in any further examination of CRIB Project. They are identified by an asterisk and were not used in the Stage IV questionnaires.

The comments which were received from the validators could be classified into four categories. The first two of these are considered the more significant ones whilst the last two involve only minor corrections to the role items. Those role items which are identified by number in the analysis that follows may be found in Appendix 2, accompanied by the validators' comments.

A. Convergence of validators' comments. In some instances, the views of the validators, as expressed in their comments, agreed with one another and disagreed with the Idealized Model. One of the more obvious examples was in the case of the comments on the role of the Supervisor of Science and Health (Role Items 12.1 to 12.6). This position was seen by both Schools and Central Office validators as being far more pivotal to the further implementation of CRIB

Project than had been realized by the investigator. For Role Items 4.7 and 5.1 three validators made the comment that the role item was more the domain of the Supervisor of Science and Health; accordingly, these roles were reassigned to that position. For two other role items, 7.2 and 8.3, the Supervisor of Science and Health was added as a partner in the role item so that these role items became cooperative ventures between the Supervisor of Science and Health and the Director of Research and the Director of Evaluation, respectively. In another instance, it appeared that the Idealized Model had attributed several role items to senior administrators that were too specific for their roles. Role 3.1 for the Assistant Superintendent of Research and Evaluation was considered too specific by three validators, one of whom commented that "a general position may be sufficient for his position." Two validators felt that Role 3.2 was also too specific for the Assistant Superintendent and so this role was made more general in the revision process.

To a greater extent than had been anticipated, Central Office validators regarded many role items as more properly being shared between two or more role holders rather than being the exclusive domain of one of them. To reflect this response, eleven role items were modified to include additional Central Office personnel. These comprised the three role items for the Director of Evaluation (8.1, 8.2 and 8.3) which involved the evaluation of CRIB Project, two items for the Directorate of Information Services (10.4 and 10.8) which concerned the computerization of CRIB Project information banks, two items for the Director of Pupil Assessment

which concerned the need to assess student progress (11.1 and 11.2), the two items for the Specialists in reading, language and mathematics which involved ensuring that CRIB materials were of the appropriate reading level and difficulty (15.1 and 15.2) and one role item each for the Director of Research (7.2) and the Supervisor of Science and Health (12.5).

B. Divergence of validators' comments. The collation of the comments and the revision process revealed divergences among validators which appeared to reflect genuine differences of opinion. One of the more significant instances concerned the role of computerization in the future implementation of the Project. There were 24 comments written by validators to the role items assigned to the Directorate of Information Systems (10.1 to 10.8) and a further four comments in addition. These can be classified into: pro computerization of the banks, 9; con computerization of the banks, 6; and non-committal or undecided, 13. Another area of divergence concerned the role of the Specialists in reading, language and mathematics (15.1 and 15.2). The responses to these two roles can be classified into: pro involvement of specialists in CRIB Project, 6; con involvement of specialists, 7; and non-committal or undecided, 8. It would appear that the areas of divergence, where two or more tenable positions obtain, are in those areas which are not currently very involved with CRIB Project. Neither the computer nor the specialists play a significant role in CRIB Project at present and it is when the validators are brought to consider the nature of any possible involvement that the diverging positions surface.

C. Misinformation revealed. One of the more straightforward outcomes of the Stage III process of revision was the pinpointing of errors of fact in the role items. There was only one major instance: Role 9, Director of Educational Data Processing. This position had been dissolved in a Central Office reorganization between the time the Idealized Model was compiled and the time the validators made their responses. Consequently, as several validators pointed out, the role items ascribed to this role had become inoperative. In the revision process they were reassigned where practicable.

D. Wording and written style of the role items. During the revision process the opportunity was taken to improve the clarity of the role items whenever such a change appeared appropriate to the panel of revisers. The panel also addressed the problem of bias in some of the role items. Validators indicated that they thought that fourteen of the role items contained a bias towards CRIB Project. The most severe strictures were reserved for Role Item 16.3: "Principals should understand that use of CRIB Project materials by a teacher leads to a more efficient and productive use of the teacher's time." Other role items commented upon in this way were 4.6, 6.1, and 13.6. Ten others (2.1, 2.2, 2.3, 4.1, 4.8, 7.1, 7.3, 16.8, 21.11 and 21.31) were also felt to be biased to some degree. There is no doubt that some of the items were biased and this is because they were taken from original documents wherever possible and so reflect the somewhat polemical style of such documents as funding proposals. It was in line with the whole approach of this study that the impetus for revision should come from the validators and not from this investigator. The biases were removed from the

fourteen items.

The revision stage produced many alterations in the original role items. The fourteen role items which were thought to be biased by at least some of the validators were rewritten to remove the bias. Eleven role items were deleted altogether. Six of these (1.1, 1.2, 3.3, 4.7, 5.1 and 5.2) were considered too specific for senior administrators. These personnel were seen as holding more of a watching brief over the Project rather than becoming involved in the day-to-day affairs of the Project. The other five role items (9.1, 9.2, 11.3, 11.4 and 11.5) were deleted either because the role position had disappeared (9.1 and 9.2) or because they were considered inappropriate by the validators. As was mentioned in Category A, Central Office validators felt that eleven of the role items should reflect a cooperative approach between two or more administrators. In the revision process, this concern was reflected in the rewriting of the role items. Of the remainder of the role items, 21 were unaltered and 44 required only slight modifications of language or style. In those instances where divergences of opinion emerged, the majority opinion, if this was clear-cut, was followed. In those instances of divergence where opinions were evenly distributed between two positions, recourse was made to CRIB Project rationale and objectives as the deciding authority: the role items which appeared to be most appropriate to a fully-implemented CRIB Project were retained. An additional 25 role items were added to the original set. The majority of these (19) were assigned to Central Office personnel in order either to replace items that had been deleted or reassigned or to augment roles in the light of the comments

from the validators. These role items can be identified in Appendix 3 since they do not have a number in parenthesis after them. This number indicates the original role item from which the revised one is derived. Of the remaining six role items which were added, three (Appendix 3: 31.4.2, 31.5.1 and 31.5.3) were added to the Director of CRIB Project on the authority of the validators, two were added to the Curricular Associates (Appendix 3: 32.3.2 and 32.3.3). One was added to the Principals (Appendix 3: 16.8).

Stage IV: Questionnaires to Establish Perceived Level of Implementation of Roles

A total of eighteen questionnaires, corresponding to the eighteen positions in the Edmonton Public School Board (EPSB) system whose roles were validated and revised in Stages II and III, respectively, were developed and distributed to the role holders. These positions are listed in Table 3, Chapter 3 and the questionnaires are presented in Appendix 4. The method of preparation of the questionnaires, whereby the revised role descriptions were turned into questionnaire items, has been described in Chapter 3 of this study. The numbers of returned questionnaires and the corresponding rates of return are given in Table 12. Since ten of the fourteen questionnaires which were sent to Central Office personnel were single-respondent questionnaires, a composite total for Central Office personnel has been given in this table.

The returns in all but one of the categories were greater than 80% (Central Office personnel: 79%). The overall rate of return was

Table 12

Rates of Return of Stage IV Questionnaires

Group	Number of Questionn- aires sent	Number of Questionn- aires returned	Percent- age Return	Number of Usable Questionn- aires
Teachers	141	115	82	93
Administrators in the Schools	88	73	83	67
Curricular Associates	5	4	80	4
CRIB Project Director	1	1	100	1
Central Office Personnel	24	19	79	16
Total	259	212	82	181

82%. Some respondents (15%) returned questionnaires which yielded no usable information either because they had defaced the identification number on the questionnaire or because they were not now connected with CRIB Project. The numbers of usable returns are given in Table 12.

The questionnaires consisted of three tasks. In Task 1 the respondents were asked to estimate the extent to which they were currently engaging in the role behaviors. In Task 2 they were asked to estimate the importance of the role items to a fully-implemented CRIB Project. In Task 3 they were asked to give free response under the headings of (a) validity or appropriateness of the role items to their role, (b) conditions necessary to the full implementation of CRIB Project which were already available, and (c) conditions necessary to the full implementation of CRIB Project which are not currently available. In the analysis of the questionnaires, the multiple-respondent questionnaires are treated first and the single-respondent questionnaires second. In each case the first two tasks are discussed together, followed by a discussion of the Task 3 comments.

Analysis of Multiple-Respondent Questionnaires

Task 1. In the first task on the questionnaires, respondents were asked to identify their current level of implementation of each of the role items on the questionnaire on a four-point scale: High, Medium, Low or Not at All. These responses for each item were coded by a numerical value being assigned on the basis of 1 for a

"High" response, 2 for a "Medium" response, 3 for a "Low" response and 4 for a "Not at All" response. The reason for assigning the low score to the High response and vice versa is that this procedure results in the role behavior which is currently assessed as being the most implemented having the lowest score. Such an ordering corresponds with the Task 2 analysis where the role behavior adjudged the most important to a fully-implemented CRIB Project also has the lowest score.

When the numerical values were summed, a measure of the perceived level of implementation of each role item was obtained with the lowest score indicating the highest level of current implementation. A final rank was assigned to the level of implementation of each role item on the basis of the rank of 1 being given to the lowest score, 2 to the next-lowest score, and so on. Should some Task 1 scores calculated in this way lie close to one another, it would be rash to assume that adjacent scores were significantly different and that the differences in rank order derived from such scores were legitimate. In such instances, recourse should be made to the use of intuitive judgments; to facilitate this process, the numbers and percentages of respondents who marked each category were also calculated.

Task 2. In the second task of the questionnaires, respondents were asked to rank their role items according to the importance that they felt each item had for a fully-implemented CRIB Project. These rank orders for each multiple-respondent questionnaire were combined into an overall rank order. A rank order of 1 indicates that the role item was considered by the respondents to be the most important to a fully-implemented CRIB Project.

Comparison of Task 1 and 2 rankings. The rankings which are obtained on the first two tasks for each of the multiple-respondent questionnaires can be compared in two ways. First, a correlation coefficient (Spearman 'rho', r_s) can be calculated (Siegel, 1956) to see if the rankings on the two tasks for each questionnaire are significantly correlated. If it is found that they are, it could be either because this result is a true reflection of the respondents' perceived level of implementation and importance to a fully-implemented CRIB Project or because the construction of the questionnaire led the respondents to answer both tasks similarly. If the correlation is not significant, then it would appear reasonable to assume that the questionnaire did not induce the respondents to answer Tasks 1 and 2 in a similar way.

Second, since the aim of the Stage IV assessment is to identify areas of congruence and incongruence between the perceived current extent of implementation of the role items with their relative importance to a fully-implemented CRIB Project, a measure is required which sets a level of congruence between the results on Task 1 and Task 2 for each role item rather than between the rankings for a set of role items. Such a measure is arbitrary and the following criteria of congruence and incongruence are recognized as such;

Congruence: The rankings on Tasks 1 and 2 for a specific role item on a multiple-respondent questionnaire are said to be congruent (C) if they differ by no more than ± 1 .

Incongruence: The rankings on Tasks 1 and 2 for a specific role item on a multiple-respondent questionnaire are said to be incongruent (I) if they differ by more than ± 2 .

Indeterminate Region: The rankings on Tasks 1 and 2 for a

specific role item on a multiple-respondent questionnaire are said to be neither congruent nor incongruent (C/I) if they differ by more than ± 1 but by no more than ± 2 .

In view of the unknown characteristics of the populations created by the Task 1 and 2 ranking procedures, and because of the arbitrary nature of the measure of congruence and incongruence, it should be emphasized that the designation of congruence or incongruence is seen as an intuitive aid to the identification of areas of discrepancy between perceived current level of implementation and perceived importance of role items.

Analysis of results from multiple-respondent questionnaires from teachers. The results of the Task 1 and 2 analyses are shown for teachers in Table 13. The low value of the correlation coefficient ($r_s = 0.33$, not significant at $\alpha=0.05$) indicates that the teachers are differentiating between the two tasks.

The Task 1 ratings by teachers (Table 13) show, not altogether surprisingly, that the role items which are currently perceived as receiving a high level of attention are those which either ease the lot of the classroom teacher (Role Items 1 and 2) or can be accomplished by the teacher with little extra effort (Role Item 8). Intuitively, (since the scores on Task 1 are so similar) the role items which are not currently perceived as being fully implemented appear to be #3, 4, 5, 6 and 7. Possible reasons for this low level of attention could be that teachers find these arduous and time-consuming, that teachers are unaware of their importance, or that CRIB Project staff has not emphasized these in their liaison work.

Table 13

Analysis of Responses by Teachers to Task 1 (Perceived Current Implementation) and Task 2 (Role Item Importance) on Stage IV, Assessment of Level of Implementation, Questionnaire

Role Item Number	Role Item Descriptor	High	Medium	Low	Not at All	Task 1 Score	Task 1 RANK	Task 2 Score	Task 2 RANK	Relation between Ranks
1	Using CRIB materials	40(43%)	30(32%)	16(17%)	7(8%)	176	1	127	1	C
2	Enrichment materials	6(6%)	9(10%)	38(41%)	40(43%)	298	3	308	2	C
3	Contribute new ideas	0(0%)	7(8%)	16(17%)	70(75%)	342	8	466	5	I
4	Summer writing	5(5%)	8(9%)	3(3%)	77(83%)	338	6	450	4	C/I
5	Attend liaison meetings	2(2%)	12(13%)	21(23%)	58(62%)	321	4	440	3	C
6	Keep cumulative file	1(1%)	5(5%)	19(20%)	68(73%)	340	7	482	6	C
7	Feedback on weaknesses	1(1%)	6(6%)	21(23%)	65(70%)	336	5	483	7	C/I
8	Inform outsiders	15(16%)	28(30%)	33(35%)	17(18%)	238	2	588	8	I

Number of questionnaires = 93

$r_s = 0.33$ (not significant at $\alpha = 0.05$)

The Task 2 rankings by teachers show that they consider usage of the bank materials as being the most important role items for a fully-implemented CRIB Project (Role Items 1 and 2). They see liaison with CRIB Project staff as important (Role Item 5) but do not consider the provision of feedback or the keeping of records on bank use as being important to a fully-implemented CRIB Project (Role Items 7 and 6).

The only incongruent items are Role Items 3 and 8. The incongruence of Item 3 indicates that teachers perceive the importance of contributing new ideas to CRIB Project but for some reason are not doing so at the present time. If teachers already perceive the importance of this step, it would appear likely that means could be found to enable them to make these contributions. The other incongruent item indicates that teachers feel that they are informing outsiders of CRIB Project but that they do not perceive this role item as being very important to a fully-implemented CRIB Project. One possible reason for this could be that they feel that if CRIB Project were fully implemented, there would be less need to inform outsiders of it since many more of them would know about it already. One of the role items, #7, which is concerned with the provision of feedback on bank weaknesses, is seen in CRIB Project rationale (Nay, 1973, 1975; Roberts, 1973) as being important. It is not perceived in this way by teachers since they rate it low in perceived level of attention and also in level of importance to a fully-implemented CRIB Project. It is possible that teachers are unaware of this aspect of the Project rationale or that they have their own reasons

for disagreeing with it.

Analysis of results from multiple-respondent questionnaires from school administrators. The results of the Task 1 and 2 analyses for school administrators are shown in Table 14. The correlation coefficient was low ($r_s = 0.42$) indicating that the school administrators are differentiating between the two tasks. The role items which administrators in the schools perceive as the ones they are currently implementing the most are Role Items 8, 9, 2, 5 and 1. These are the role items that require a level of awareness on the part of the school administrators but do not require any specific action. The role items requiring action are currently not perceived as being fully implemented (Role Items 3, 4, 6 and 7). It would appear that school administrators would be prepared to take a more active part in a fully-implemented CRIB Project as Role Item 3 was perceived as being very important to a fully-implemented CRIB Project. School administrators were not prepared, however, to encourage non-users to become users (Role Item 6 was ranked 9th on both Tasks 1 and 2). When the provision of release time was considered by the school administrators, it would appear that they do not feel that it is important that they help to provide such time (Role Item 7) nor do they appear to feel that it is very important to a fully-implemented CRIB Project that they be aware of the need for such time (Role Item 9, Task 2). Yet they indicate that they are well aware of the need for release time (Role Item 9, Task 1). One possible interpretation of these results could be that school administrators feel that just because they

Table 14
Analysis of Responses by School Administrators to Task 1 (Perceived Current Implementation) and Task 2
(Role Item Importance) on Stage IV, Assessment of Level of Implementation, Questionnaire

Role Item Number	Role Item Descriptor	High	Medium	Low	Not at All	Task 1 Score	Task 1 RANK	Task 2 Score	Task 2 RANK	Relation between Ranks
1	Know CRIB rationale	19(28%)	28(42%)	15(22%)	5(7%)	140	5	313	4	C
2	Know need of writing	19(28%)	33(49%)	11(16%)	4(6%)	134	3	324	6	I
3	Tell staff of CRIB	11(16%)	23(34%)	21(31%)	12(18%)	168	8	299	2	I
4	Promote CRIB	11(16%)	28(42%)	18(27%)	10(15%)	161	7	323	5	C/I
5	See CRIB savings	18(27%)	33(49%)	12(18%)	4(6%)	136	4	298	1	I
6	Encourage non-users	7(10%)	17(25%)	28(42%)	15(22%)	185	9	395	9	C
7	Find release time	25(37%)	14(21%)	11(16%)	17(25%)	154	6	370	7	C
8	Be aware of CRIB	35(52%)	26(39%)	4(6%)	2(3%)	107	1	308	3	C/I
9	See need of time-off	27(40%)	26(39%)	7(10%)	7(10%)	128	2	388	8	I

N = 67

$r_s = 0.42$ Not significant at $\alpha = 0.05$

appreciate the need for release time does not mean that they will be able to provide it for their teachers. The validators' comments in Stage II of the study indicated that principals would only be willing to aid in the provision of release time if they were sure that adequate substitution could be provided (Appendix 2, Role Item 16.5). It is possible that if release time is important for the full implementation of CRIB Project, ways will have to be investigated of ensuring that it can be made available.

Analysis of results from multiple-respondent questionnaires from curricular associates. The results of the Task 1 and 2 analyses are shown for curricular associates in Table 15. The low value of the correlation coefficient ($r_s = 0.40$) indicates that the curricular associates are differentiating between the two tasks in their answers. Because of the small number of curricular associates involved ($N = 4$), percentages of respondents are not given. Again on account of the small sample size, wide fluctuations in rank order can occur upon interchanging just one or two responses; caution is in order in interpreting the measure of congruence and incongruence.

By their scores on Task 1 the curricular associates indicate that they feel that they are participating in the writing sessions and are carrying out tests of the bank materials. On the other hand they do not perceive their roles of being a channel for teacher ideas (Role Item 1), of noting difficulties in bank operation (Role Item 6), of helping teachers use the banks (Role Item 7) and of attending meetings in the school year (Role Item 5) as

Table 15

Analysis of Responses by Curricular Associates to Task 1 (Perceived Current Implementation)
and Task 2 (Role Item Importance) on Stage IV, Assessment of Level of Implementation, Questionnaire

Role Item Number	Role Item Descriptor	High	Medium	Low	Not at All	Task 1 Score	Task 1 RANK	Task 2 Score	Task 2 RANK	Relation between Ranks
1	Be an idea channel	0	2	2	0	10	7.5	24	7.5	C
2	Evaluate Bank materials	1	2	1	0	8	5	12	1	I
3	Join writing sessions	3	1	0	0	5	1.5	19	5.5	I
4	Be adept at using banks	1	3	0	0	7	3	17	4	C
5	Attend meetings	1	2	1	0	8	5	13	2	I
6	Note troubles in banks	0	2	2	0	10	7.5	24	7.5	C
7	Help teachers to use banks	0	4	0	0	8	5	16	3	I
8	Field-test materials	3	1	0	0	5	1.5	19	5.5	I

$N = 4$

$r_s = 0.40$

Not significant at $\alpha = 0.05$

being given a high level of attention at present. They do appear to perceive two of these roles, 5 and 7, as being important to a fully-implemented CRIB Project. It is possible that they are saying that their role is to assist teachers in using the banks. They do not feel that their participation in the summer writing sessions is important to a fully-implemented CRIB Project although that role item (#3) has reached what appears to be a high level of implementation. Perhaps they feel that writing is important but that it need not necessarily be done by them. In general it would appear that the current level of perceived implementation of the role items for the curricular associates does not agree very well (Role Items 1, 4 and 6 are rated congruent whereas Role Items 2, 3, 5, 7, and 8 are rated as incongruent) with their perceptions of which role items are important for a fully-implemented CRIB Project. The role of the curricular associate in the fully-implemented CRIB Project needs scrutiny.

Analysis of results from multiple-respondent questionnaires from members of the Instructional Media Centre. The results of the Task 1 and 2 analyses are shown for members of the Instructional Media Centre (I.M.C.) in Table 16. The correlation coefficient could be calculated ($r_s = 0.83$; significant at $\alpha = 0.05$, not significant at $\alpha = 0.01$). The statistically significant value of r_s may be attributable either to the effect of the questionnaire design or to the respondents feeling that their current level of implementation of the role items is comparable to that required for a fully-implemented CRIB Project. Since the value of r_s

Table 16

Analysis of Responses by Personnel of Instructional Media Centre to Task 1 (Perceived Current Implementation) and Task 2 (Role Item Importance) on Stage IV, Assessment of Level of Implementation, Questionnaire

Role Item Number	Role Item Descriptor	High	Medium	Low	Not at All	Task 1 Score	Task 1 RANK	Task 2 Score	Task 2 RANK	Relation between Tasks
1	Tell CRIB of deleted materials	0	0	0	0	8	4.5	11	6	C/I
2	Tell CRIB of available texts	0	0	0	2	8	4.5	9	4.5	C
3	Tell CRIB of new releases	0	0	0	2	8	4.5	9	4.5	C
4	Be aware of A-V material for CRIB	0	1	1	0	5	1	3	1.5	C
5.	Help computerize IMC and CRIB	0	0	0	2	8	4.5	7	3	C/I
6	Be aware of A-V items in CRIB	0	1	0	1	6	2	3	1.5	C

N = 2

$r_s = 0.83$ Significant at $\alpha = 0.05$ Not significant at $\alpha = 0.01$

was the only one to exhibit statistical significance at $\alpha = 0.05$, it is possible to assume that the questionnaire design is not at fault in this instance. The small sample size ($N = 2$) makes meaningful interpretation of the results a hazardous undertaking. However, certain broad statements may be made. It appears that the current perceived level of implementation of the role items for I.M.C. is low. Apart from being somewhat aware of the type of audio-visual (A-V) material used in CRIB Project banks and being somewhat aware of the kinds of materials required by the CRIB Project banks, there is little evidence of interaction between CRIB Project and I.M.C. From the Task 2 rankings the indications are that the I.M.C. personnel in the survey do not see any of the other role items as being very important to a fully-implemented CRIB Project. If the attainment of the role items for I.M.C. is considered important for the further implementation of CRIB Project, then some reconciliation between the perceptions of I.M.C. personnel and the role items expressed in Table 16 will be required.

Analysis of results from multiple-respondent questionnaires from members of the Library System. The results of the Task 1 and 2 analyses are shown for members of the EPSB Library system in Table 17. Since all respondents rated Task 1 in the identical fashion, it was not possible to establish a rank order for Task 1 scores and hence it was not possible to calculate a correlation coefficient or to assign the classification of congruence or incongruence. Only broad statements are possible from the incomplete data of this Table. One obvious conclusion is that the library personnel who responded do not perceive themselves as giving any

Table 17

Analysis of Responses by Personnel of Library Services to Task 1 (Perceived Current Implementation) and Task 2 (Role Item Importance) on Stage IV, Assessment of Level of Implementation, Questionnaire

Role Item Number	Role Item Descriptor	High	Medium	Low	Not at All	Task 1 Score	Task 1 RANK	Task 2 Score	Task 2 RANK	Relation between Tasks
1	Cooperate in schools to make new materials	0	0	0	0	16	-	14	7	-
2	Help computerize Library and CRIB	0	0	0	0	16	-	16	8	-
3	Be aware of library materials in CRIB	0	0	0	0	16	-	10	5	-
4	Tell CRIB of deleted materials	0	0	0	0	16	-	8	4	-
5	Tell CRIB of newly available materials	0	0	0	0	16	-	11	6	-
6	Be aware of library materials for CRIB	0	0	0	0	16	-	2	1	-
7	Ensure CRIB needs are available in schools	0	0	0	0	16	-	7	3	-
8	Tell CRIB of new releases	0	0	0	0	16	-	4	2	-

N = 2

attention to any of the role items on the questionnaire. From their responses on Task 2, it would appear that the library personnel feel that being aware of the kinds of material required by CRIB Project (Role Item 6) would be the most important role item to a fully-implemented CRIB Project. They do not appear to feel that their role is one of interaction with CRIB Project. If the attainment of the role items ascribed to the library services is considered important for the further implementation of CRIB Project, then some reconciliation between the perceptions of library personnel in EPSB system and the role items expressed in Table 17 will be required.

Analysis of Task 3 free response comments from multiple-respondent questionnaires. In the third task on the questionnaire, respondents were asked to comment on the perceived validity or appropriateness of the listed role items in terms of their own role, and to list the conditions which they deem necessary to the full attainment of the roles and which are or are not currently available. An analysis of the Task 3 comments was carried out by grouping the comments into common categories of their authors' concern and opinion. The comments on Task 3 by the teachers are summarized in Table 18.

The teachers' comments in Task 3(a) which asked for the respondents' judgement on the appropriateness of the questionnaire role items to their position, showed that of the 25 responses to this task, 17 (68%) of the teachers felt that the role items were, on the whole, appropriate whereas 3 (12%) did not. There were four

Table 18

Summary of Task 3(a), (b) and (c) Free Responses of the Multiple-
Respondent Questionnaires for Teachers

Task 3 subtask	Condensed Category	Number of Comments
(a) Appropriateness of role items	On the whole, they are appropriate	17
	On the whole, they are not appropriate	3
	I don't understand these questions	4
	Role Items are very idealized	1
(b) Conditions now existing which are necessary to full implementation	A bank in every school	3
	The frequent visits of science consultants	3
	Easy accessibility of the banks	2
	Sufficient laboratory equipment	2
	Teaching staff willing to try CRIB	1
	Sufficient secretarial help	1
	The summer writing program	1
(c) Conditions not existing at present but which are necess- ary to full implementation	Adequate preparation time	25
	Interaction between CRIB staff and users	13
	Extra typing assistance	12
	Money for buying paper	8
	Laboratory assistant and/or equipment and/or space	8
	In-service on use of CRIB banks	6
	In-service to examine and assimilate CRIB Project philosophy	6
	More extensive and faster revision of CRIB materials	6
	Simpler copier system for dupli- cation of CRIB materials	5
	Writing time and/or writing money	5
	Looseleaf edition of bank materials for teacher's own personal use	3
	Better student "readers" and/or help for slow learners	3
	Commitment by EPSB system	1
	More A-V material available	1
	More Canadian content	1
	Payment for contributed materials	1
	Expanded range of content	1

Note: Forty-eight of the teachers who returned usable questionnaires
replied in free response to Task 3.

responses (16%) where the teachers indicated that they did not understand the question. Only 13 responses were obtained on Task 3(b) which asked respondents to comment on the conditions already existing which were necessary to a fully-implemented CRIB Project. Three teachers mentioned the banks themselves and three mentioned the visits of the curricular associates. The other seven comments were divided among five items. Task 3(c) solicited information on those conditions deemed necessary for a fully-implemented CRIB Project which do not exist at present. Here the response was much greater. Of the 105 comments made, 25 (24%) felt that teachers required adequate preparation time. Since the use of the banks in place of a teacher's own lesson planning and materials preparation should result in a saving of time, it may be assumed that the advocated preparation time was seen as necessary to fulfil the other objectives of CRIB Project such as the provision of feedback and the participation in meetings and writing sessions. There were 20 comments (19%) indicating that extra secretarial help and supplies were needed in a fully-implemented CRIB Project. Of the other comments, 12 (11%) advocated more in-service training and 10 (10%) were addressed to improving the materials in the banks.

The Task 3 comments on the multiple-respondent questionnaires returned by school administrators are summarized in Table 19. On Task 3(a) there was a high proportion of responses (68%) indicating that the role items were appropriate. None of the school administrators responded that the role items were

Table 19

Summary of Task 3(a), (b) and (c) Free Responses of the Multiple-
Respondent Questionnaires for School Administrators

Task 3 subtask	Condensed Category	Number of Comments
(a) Appropriateness of role items	On the whole they are appropriate	13
	On the whole they are not appropriate	0
	I do not understand these questions	2
	I don't feel that I can judge	4
(b) Conditions now existing which are necessary to full implementation	Presence of banks in the school	4
	Interested teachers	4
	The release time	2
	The inservice and/or visits by C.A.s	2
	The summer writing sessions	1
	Existence of a Project Director	1
	Encouragement by school administrators	1
(c) Conditions not existing at present but which are necessary to full implementation	Information transfer and interaction between CRIB Project staff and school administrators	12
	Teacher release time for developing the banks	10
	Administrators' time	7
	Teacher in-service and professional development time	7
	Proper design of science rooms and/or adequate storage facilities	5
	Central Office involvement and commitment	4
	Better duplication system and secretarial help	3
	Money	3
	Computer terminals	2
	Interaction between CRIB staff and teachers	1
	Staff acceptance	1
	Materials at different reading levels	1
	Interchange of ideas among teachers at the classroom level	1

Note: Thirty-four school administrators who returned usable
questionnaires replied in free response to Task 3.

inappropriate and two respondents (11%) reported that they did not understand the question. Four respondents (22%) did not feel that they could judge the appropriateness.

The most common response to Task 3(b) was that the presence of the banks was the most important condition for a fully-implemented CRIB Project. In Task 3(c), of the 57 responses from the administrators 12 (21%) indicated that the administrators felt that more interaction between themselves and CRIB Project staff was needed. Ten of the responses (18%) implied that release time for teachers was necessary but currently not available. Seven responses (12%) suggested that teacher inservice and professional development time was required; those values correspond well with the proportion of teachers advocating more time (24%) and in-service (11%). A further seven responses (12%) implied the need for more of the administrators' time being applied to CRIB Project. The remainder of the comments were spread among nine categories.

The Task 3 comments by the four curricular associates are summarized in Table 20. Once again the respondents felt that their role items were appropriate. In their assessment in Task 3(c), the conditions required for a fully-implemented CRIB Project, the curricular associates placed time to meet and work with teachers at the top of the list; six of the comments concerned these matters.

Two other groups who returned analyzable multiple-respondent questionnaires were Personnel in EPSB Library system and Personnel in I.M.C., but the comments in Task 3 of these responses were so sparse as to preclude any meaningful analysis.

Table 20

Summary of Task 3(a), (b) and (c) Free Responses of the Multiple-
Respondent Questionnaires for Curricular Associates

Task 3 subtask	Condensed Category	Number of Comments
(a) Appropriateness of role items	On the whole they are appropriate	3
(b) Conditions already existing which are necessary to full implementation	Writing time	1
	Availability of banks to teachers	1
	In-service contact with teachers	2
(c) Conditions not existing at present but which are necessary to full implementation	Time to meet with teachers	2
	Time to work with teachers in testing and developing materials	2
	Adequate duplication facilities	1
	Pipeline for processing teacher feedback	1
	Increased commitment from EPSB system	1
	Extra time for curricular associates to work with beginning teachers	1
	Teacher preparation time	1

Note: Three of the curricular associates who returned usable
questionnaires replied in free response to Task 3.

Accordingly, these comments are treated as if they were in response single-respondent questionnaires and are analyzed in the more general and confidential way which is described in the section concerning the analysis of single-respondent questionnaires.

The Task 3 responses for the three major groups of multiple-respondent questionnaire respondents reveal several points of agreement. From the perspective of this study, it is interesting that of those who responded in Task 3(a) the majority (70%) felt that the role items were appropriate to their roles in a fully-implemented CRIB Project whereas only 6% felt that they were not. From the point of view of the full implementation of CRIB Project, it was revealing that teachers, administrators and curricular associates all shared the view that release time and in-service time for teachers were conditions for a fully-implemented CRIB Project which currently do not exist.

The comments also allowed the respondents to address areas which were not part of Tasks 1 and 2 of the questionnaire. These comments should be useful for those seeking new directions for CRIB Project; for example, three of the teachers commented (Table 18) on the need for materials for slow learners and one saw more Canadian content as a condition for full implementation.

Analysis of Single-Respondent Questionnaires

Eleven single-respondent questionnaires were sent out in Stage IV. The holders of the positions in EPSB system to whom they were sent are shown in Table 3, p.57. In addition to these eleven,

two of the multiple-respondent questionnaires are also analyzed here. These are the multiple-respondent questionnaires which were sent to the Directorate of Information Systems and to the Specialists and Consultants in Reading and Mathematics; the low number of completed responses precluded their analysis using the techniques for multiple-respondent questionnaires. No tables of comments were compiled so that the confidentiality of the respondents could be the better protected. The analyses which follow have been made as specific as possible but owing to the nature and sources of the data, the analyses are inevitably more general than for the multiple-respondent questionnaire.

All but one of the eleven role holders were Central Office personnel; the exception was the Director of CRIB Project who is a curricular associate with special responsibility for CRIB Project. Because of the restrictions due to the confidentiality of the information given by respondents, no detailed findings can be given. Instead, a general statement is made with respect to the responses on each of the three tasks by these respondents. The recipients of the single-respondent questionnaires (and the two multiple-respondent questionnaires which are also being examined here) can usefully be split into three groups: Those of Director rank or above, those not of Director rank or above who are currently involved to some extent with CRIB Project, and those not of Director rank or above who are currently not involved with CRIB Project. The purpose of this division is to group together those respondents who are likely to have similar levels of involvement in CRIB Project.

For example, the nature of involvement by those of Director rank or above is not likely to be as direct as that of the other groups and will therefore be weighted towards such behaviors as being aware of the Project rather than towards such aspects as direct involvement.

Responses by those of Director rank and above. Each of the six respondents indicated that they were implementing at least some of the role items at a High or Medium level. In all but one instance the respondents indicated that they were implementing more than half of the role items at these levels; the roles being given the high levels of attention were those concerned with the defining of policies for curricular matters such as CRIB Project and those concerned with developing lines of communication to ensure that policies are being implemented. In the lone case of the respondent who reported the implementation of less than half of the role items, the reason given was that the role holder did not concur with the role descriptions in the questionnaire.

Qualitatively, it appears that there was a very high degree of congruence between Tasks 1 and 2. Of the six members of this group, four respondents indicated perfect congruence between the current level of implementation of their role items and the relative importance of these role items for a fully-implemented CRIB Project. One respondent commented that the role items did not lend themselves to the sort of ranking tasks which were requested since such a ranking is one-dimensional and the respondent considered that his role items were too interdependent to permit such an analysis.

These respondents made only a few comments in Task 3. Of the four who responded to the question of the validity or appropriateness of their role items, three felt that the role items were descriptive and one felt that they were about half-accurate. Commenting on the conditions which are necessary to a fully-implemented CRIB Project and which are currently available, three of the four who commented thought that the organizational structure and/or the personnel responsible for the operation of CRIB Project were adequate. Of the two who commented on the financial aspect, one felt that the resources were "reasonably adequate" and the other felt that they were minimal. Among the suggestions for the conditions required which are presently not available, one of the three respondents advocated an assured sum of money for the Project in future years while another advocated external funding but saw little chance of obtaining any money from the Department of Education. Two of the respondents suggested some form of permanent structure to aid the Project in its work: one respondent suggested the establishment of an agency to act as a clearing-house for curriculum development and implementation, and the other proposed a coordinating committee which would be representative of all the personnel involved in the successful operation of CRIB Project. The same two respondents also advocated allotments of in-service time to both CRIB Project staff and teachers to increase the degree of implementation of the Project. Two respondents felt that on-going assessment was important to monitor the progress of the implementation of the Project.

From this analysis it appears that those high-level

administrators who replied to the questionnaires are conversant with CRIB Project and with at least some of its objectives. Since the six respondents in this category represent 67% of the number polled, it can be assumed that a majority of the senior level administrators who should be conversant with CRIB Project are indeed informed of it. Any commitment to CRIB Project was not necessarily spelled out in the responses of the senior administrators since many of their roles were of the facilitating type such as: "Opening lines of communication" which can and do apply to any curricular project; the extent to which any level of commitment to CRIB Project has been affected by their participation in this study cannot be measured but it may be possible to make some inferences by noting their actions in the times ahead.

Responses by those below Director rank who are currently connected with CRIB Project. Each of the two respondents indicated that they were currently implementing three-quarters of their role items at a High or Medium level. There was, qualitatively, a high degree of congruence between Tasks 1 and 2 with one member reporting perfect congruence between current level of importance and perceived importance of the role items for a fully-implemented CRIB Project. The other respondent felt that "some changes in the offing may help realize (some currently unrealized role items)."

The one respondent who answered the Task 3 questions felt that the role items were appropriate to the position being considered. This respondent also felt that if the current level of support, in terms of both money and personnel, could be maintained, CRIB Project and his role in it could continue. This

respondent also felt that the involvement of other school systems was an important condition for the full implementation of the role. He shared the belief of members of the group of Directors and above that the establishment of some sort of permanent authority was essential to the full implementation of CRIB Project and hence to his role in it. He also felt that the changeover to computer-based operation was essential in the long-term to the health of the Project. Teacher support and involvement in writing and upgrading of materials was also perceived as essential to the full implementation of the Project.

Responses by those below Director rank who are currently not connected with CRIB Project. In this category fall those responses made by members of the Directorate of Information Systems and the Supervisors and Consultants of reading and mathematics which were not present in sufficient numbers to permit their analysis under the procedure for multiple-respondent questionnaires. In addition, the analysis of the Task 3 comments includes the multiple-respondent questionnaire responses made by personnel in the library system and in the I.M.C. which were too sparse to permit analysis under the procedures used for multiple-respondent questionnaires.

Three of the four respondents indicated no current level of attention being given to any of the role items. The one exception indicated an awareness of some of the needs of CRIB Project such as the necessity of developing "interfaces between users (i.e. CRIB Project staff) and the (service) departments of EPSB." Two respondents indicated that they anticipated no involvement with

CRIB Project in the future. The other two respondents indicated that they felt that their departments would make the greatest contribution to the further implementation of CRIB Project by collaborating with the staff of the Project rather than by initiating any action on their own.

Only one respondent replied using the Task 3 space. This respondent indicated that the Specialists and Consultants in reading and mathematics could play a part in ensuring that the correct sequencing of topics (in, say, science and mathematics). Such an involvement, they felt, could make for greater efficiency in the schools. An impression was conveyed by personnel in the library system that it was up to the science teachers and those concerned with science projects such as CRIB Project to make the effort to find out what help the library system could provide. The implication was that if the science teachers and others did this, they would find that the library services were able and prepared to help.

No strong trends emerged from the analysis of the single-respondent questionnaires. There was a wide range of interest in, knowledge of and commitment to CRIB Project. In general, respondents were at least warm to the Project but the feeling was left that CRIB Project did not, in many cases, impinge on their professional life to a great extent.

Summary

The data of this chapter have indicated several broad conclusions that can be made. In the Stage II validation, the

validators were for the most part apparently able to distinguish between commenting on what CRIB Project is now and what a model was indicating a fully-implemented CRIB Project would look like if it were fully implemented. The comments which they supplied could and did reveal areas of agreement and areas of justifiable divergence of views. The revision process of Stage III could be accomplished by heeding the comments of the validators except in the areas of justifiable divergence where the revisers had to make decisions on the basis of referring to the Project rationale and objectives. It seems apparent that the Revised Idealized Model reflects more closely than did the original Idealized Model the perceptions, understandings and experiences of the personnel most closely connected with the development of CRIB Project and with implementations in EPSB system. The Stage IV assessment showed that the questionnaire respondents appeared to be able to make the distinction between assessing a current level of implementation of a role item and its importance to a fully-implemented CRIB Project. From the measures of congruence and incongruence developed for the multiple-respondent questionnaires it was possible to identify areas where shortfall of the current perceived performance from the ideal was indicating that implementation was incomplete. Reasons for these incongruencies were often suggested by the comments provided in the Task 3 free response sections of the multiple-respondent questionnaires. The analysis of the single-respondent questionnaires did not permit such detailed analysis but revealed insights into the ways in which senior levels of administration view

the significance of CRIB Project and its implementation. The single-respondent questionnaires were able to identify areas of incomplete implementation of CRIB Project in Central Office.

CHAPTER 5

DISCUSSION AND RECOMMENDATIONS

The discussion in this chapter concentrates on the two aspects of the study outlined in the Statement of the Problem, Chapter 1:

1. The assessment of the state of implementation of the role descriptions required by Edmonton Public School Board (EPSB) system personnel for a fully-implemented CRIB Project;

2. The development of a methodology for evaluating the state of implementation of the role descriptions of personnel involved in any middle-budget program.

This chapter is divided into three main parts. In the first sub-chapter, Stages I, II and III are treated together since they were directed towards the production of the Revised Idealized Model. In the second and third sub-chapters, the Stage IV assessment is discussed under the two main concerns of the study; the order of treatment is reversed so that Chapter 5 may end with the recommendations arising from the assessment. Therefore, the second sub-chapter addresses the methodology of the Stage IV assessment and the third and final sub-chapter discusses the results of the Stage IV assessment. Recommendations for the decisions which need to be taken if the objectives and rationale of CRIB Project are to be more fully implemented arise from the discussion of the results and are stated at the appropriate junctures.

Stages I, II and III of the Study: The Idealized Model

Stage I: Formulation of the Idealized Model

A model is usually perceived as a representation of something and, often, there is a connotation of the process of abstraction attached to the word. In this study, the model which evolved in Stage I was termed an Idealized Model because it was a model of an ideal rather than of something tangible or even attainable. The ideal which the Model attempted to portray was a fully-implemented CRIB Project where all the objectives of the Project were totally operational. No two Idealized Models of a project, constructed by two different individuals or teams would be identical, but for a given project with a given set of objectives in a given organizational setting any Idealized Model must be expected to share certain similarities with any other. For example, given the objectives of CRIB Project (Appendix 1, p. 62) it would appear inevitable that the role items for teachers would include such activities as using the banks, contributing feedback and participating in meetings and writing sessions. In this study, while reference is made to "the" Idealized Model, there is no intention to suggest that the model which was generated in Stage I is the only possible model of a fully-implemented CRIB Project. Provided a model has represented as best it can a fully-implemented CRIB Project, any such model could be called an idealized model.

The effectiveness with which the Idealized Model fulfilled

its several functions can really only be judged in the light of the results obtained in Stages II, III and IV. As was detailed in Chapter 3 of this study, the Idealized Model of a fully-implemented CRIB Project was required:

1. To inform its readers of the nature of CRIB Project,
2. To channel its readers' reactions along lines pertinent to the study,
3. To limit and focus the validators' efforts to those areas delimited by the study, and
4. To solicit and encourage sufficient comments for a comprehensive revision of the model in Stage III.

The compilation of the Idealized Model took several months. In terms of investment of energy and time it was by far the most demanding stage of the study and, since it was the cornerstone of the research, the most important. Care had to be taken to ensure that the Idealized Model was as near as possible a representation of a fully-implemented CRIB Project (as determined by the objectives and rationale of the Project) so that the revisions in Stages II and III were operating on as complete and faithful a model as possible.

Very little feedback was received from the validators on the worth of the Idealized Model per se. This is not surprising since such comments were not actively solicited. The comments that were provided are given in Tables 4 and 5, Chapter 3. In addition, some word of mouth reaction indicated that the length of the document required more time to read and comment upon than could reasonably be expected of a validator. There was no way of establishing a correct

length for such a document and there was no plan to edit it or condense it before it was dispatched to the validators. The most important reason that no condensation was undertaken was that the Model was already a distillation of a much longer document and represented the minimum length which, it was felt, was required if the purposes of the model were to be met. Also, the validators were chosen either for their known involvement in CRIB Project or, in the case of some Central Office personnel who were not directly concerned with CRIB Project, for their involvement in implementation and evaluation of innovations in Edmonton Public School Board (EPSB) system in general; they were presumed to have an interest in the topics covered in the Idealized Model. The high rate of return of the validated models in Stage II (92%) redounds to the credit of those members of EPSB system who were validators in this study.

During the compilation of the Idealized Model certain delimitations on its scope had to be made. It was a big decision to ignore the financial aspect of CRIB Project and it was regrettable that the effect of the Project on student learning or attitudes had to be omitted. The resources were not available to this researcher for him to conduct a cost-effectiveness analysis or even to address the question of cost itself; neither were the resources available to investigate the effect of CRIB Project on student learning or attitudes.

The lack of emphasis on the present state of CRIB Project and the concentration of an idealized state of CRIB Project was deliberate. Only in this way, it was felt, would the validators in Stage II be free to respond without prejudice caused by their

present level of involvement with the Project. How well this expectation was met will now be discussed.

Stage II: Validation of the Idealized Model

The validation of the Idealized Model was intended to make it a more accurate representation of how a fully-implemented CRIB Project was conceptualized by those members of EPSB system who were most intimately connected with either CRIB Project or the other issues addressed by the model. The term "validation" was thus being used in the sense of: "increasing the worth" rather than in the more usual measurement-theory sense.

The decision to select personnel as validators who are very involved with the project which was being assessed was one of the more innovative aspects of the study. It must be emphasized that the validators were not being required to conduct any type of evaluation on CRIB Project; they were being required to assess the accuracy and completeness of a model - a model of how CRIB Project would be operating if all its objectives were fully implemented. They were being asked to comment on a hypothetical situation but it was a situation whose details were most appropriately checked and improved by the talents and experiences of the selected validators. Great pains were taken in the letter accompanying the Idealized Model to emphasize the hypothetical or idealized nature of a "fully-implemented CRIB Project." A perusal of the validators' comments given in Appendix 2 suggests that this point was, in the main, well taken. However, whenever respondents have a close involvement with a project being investigated, even when their

response task is couched in an abstract form such as an idealized model, there is a concern that the responses might be biased. Is it not possible, for example, that the holder of a certain position might advocate exaggerated responsibilities for his or her position, not in order to ensure a fully-implemented CRIB Project, but to inflate the importance of his or her position? There was no guarantee that a validator would not react in such a way although it was anticipated that the professional demeanour of the validators would make this unlikely. However, some safeguards were available to uncover such misuse of the validator's role. Bias of this type would reflect itself in comments from the self-seeking validator which would be uniquely contributed by him or her and which would be self-serving. They might, for example, recommend great increases in influence or finances or staffing for their position. Needless to say, just because a validator does not agree with his or her colleagues does not mean that self-serving bias is occurring. Many instances of divergence among validators were expected and were found, but when these were examined no egocentric prejudice could be detected.

It was conceivable that less extreme but more generalized prejudice might pervade the responses of the validators. Such a slanting of opinion, however unlikely, might have occurred and might have been difficult to detect if all the validators had been chosen according to Criterion 1 (Chapter 3, p.40). However, the responses of the validators who were selected according to Criterion 2 and who, as a consequence, had no prior commitment to CRIB Project, acted as a form of control on the remaining responses. When all the responses

were examined, differences of opinion were prevalent but no systematic bias in favour of or in opposition to CRIB Project was noted. It remains possible that some undetected bias remains buried under the validators' legitimate differences in perception.

Comments by validators on Sections 1, 2 and 3 of the Idealized Model. Originally it was intended that there would be no formal mechanism in the Idealized Model for the recording of the validators' comments. Rather, the expectation was that the respondent should feel free to answer anywhere he or she chose on the document. As the draft of the Idealized Model matured through several versions, it became apparent that the first three sections: "CRIB Project is located", "CRIB Project is defined", and "CRIB Project is examined", represented a progressively sharper focus on CRIB Project which culminated in the fourth section: "CRIB Project is dissected". As a result, it was only in Section 4 that an organized response format was adopted although the validators were encouraged to respond to the earlier sections as well. Because of the differences in nature and amount of response, the validators' comments on the first three sections of the model are discussed separately from those to the role items in Section 4.

It is interesting to see how the validators' perceptions of their task changed as they progressed through the four sections of the model and appeared gradually to come to appreciate that they were commenting on an Idealized Model and not on the present state of CRIB Project. Section 1 of the Idealized Model ("CRIB Project is located") was a literature survey. Since this section was

principally designed to set the stage for the other sections, few comments were expected and few were obtained. Those that were written tended to be general in nature. They are reported in Tables 4 and 5, Chapter 4; they are characterized by being mainly expressions of what appears to be the validators' pent-up feelings on perceived deficiencies in CRIB Project as it is currently operating. It seems that in their comments on this section the validators were not yet sure of their role and were feeling their way towards a full understanding of what was required of them as validators.

The comments in Section 2 ("CRIB Project is defined") were again sparse and general in nature. They are reported in Tables 6 and 7, Chapter 4. The comments tended to be directed towards what needs to be done in order to achieve the full implementation of CRIB Project. By this stage it seemed that at least for those validators who commented in this section, the concept of an idealized model was beginning to take shape. Presumably the same may have been the case for most of the other validators, too.

Section 3 ("CRIB Project is examined") showed graphically (Appendix 1, Figure 1, p. 61) all the links between the different people and services within EPSB system which should be operating in a fully-implemented CRIB Project. There were only fourteen comments by validators made in this section. They are shown in Tables 8 and 9, Chapter 4.

The paucity of responses to the first three sections may have been due to the limited resources of time and energy available to the validators. Another explanation could be that the

validators were less interested in these more conceptual sections and could relate more readily from their vantage-points as pragmatists to the practical concerns expressed in Section 4. Whatever the reason, there were insufficient comments received to permit any major revisions to be made to the first three sections of the Idealized Model.

Comments by validators on Section 4 of the Idealized Model.

Section 4 ("CRIB Project is dissected") elicited an impressive number of responses from the validators. Alone, the fact that 742 comments were written by 46 validators has several implications for the technique developed in this study. First, it would seem that the procedure of using personnel who have been involved with a project can be a successful way to obtain a large quantity of feedback. Second, it appears that mere length of the document submitted to the validators need not be a barrier to such a study provided that the respondent is motivated to take the time and make the effort to reply. Third, since a small minority of the validators selected according to Criterion 2 who replied conscientiously could see no or only slight relevance of CRIB Project to their situation, it would appear that a highly professional body of people can be induced to respond to such a document as the Idealized Model if they perceive their labours as resulting in some worthwhile professional outcome.

Mere numbers of comments received cannot indicate how successfully the validators understood and acted upon the intentions behind the Idealized Model. Three questions suggest themselves. First, did the validators respond to the Idealized

Model of a fully-implemented CRIB Project or were they preoccupied with current problems of the Project? Second, were the comments suitable for revising the Idealized Model in Stage III or were they extraneous to this purpose? Third, were the comments framed within the limitations of the study? An examination of the comments (Appendix 2) indicates that to an appreciable extent, validators did answer with an Idealized Model in mind but there were comments which, though useful and interesting, were not directly applicable to the revision of the role items. A typical selection of comments to a role item will illustrate this point.

14.1 The Library Services should be aware of all the materials in their catalogues which are mentioned or used in the materials of CRIB Project banks.

The eleven comments, copied from Appendix 2, from the validators were:

- (a) Should have a cataloguing system that is adaptable to the CRIB Model
- (b) "Have a level of awareness. . . "
- (c) The people involved directly with CRIB can inform the Library Systems personnel of the materials pertinent to CRIB
- (d) CRIB people should look for materials in the library
- (e) Not practical unless subject-area specialists would be set up
- (f) . . . although the trend has been to make CRIB self-sufficient
- (g) Catalogues are not available in Library Services
- (h) Is this practicality possible?
- (i) As people change, it is difficult for incumbents to

become totally aware of all resources catalogued

(j) Might be expecting too much of them

(k) Time consuming, therefore expensive

Comments (a), (b), (c), (d) and to a lesser extent, (e), all address the role item as it applies in a fully-implemented CRIB Project. Comments (f) and (g) reflect on the situation as it now is; they will make interesting reading to someone concerned with the present interaction between CRIB Project and Library Services but will not contribute to any revision of the role items. Comments (h), (i) and (j) do not address the suitability of the role item directly but draw attention to potential problem areas. This is a bonus but is not really germane to the study. Comment (k) is addressing financial implications which were beyond the scope of the study but such comments are considered, of course, as a potentially useful guide to further studies.

The Stage II validation of the Idealized Model produced a wealth of information from the respondents. Any worry of the validation stage yielding insufficient feedback to permit a Stage III revision of the Idealized Model was dispelled. It is impossible to state for certain why so much information was received. One reason must be the professional commitment by those members of EPSB system who were validators. Another reason might be that the document which the validators received aroused their interest and caught their attention. A third reason could be that since the content of the Idealized Model impinged so directly on their areas of professional concern and, often, on their areas of personal and professional

commitment, they were motivated already to respond to the Idealized Model.

If so much feedback was obtained, it might be wondered how many validators were necessary to obtain sufficient comments to permit the Stage III revision. The guideline for this study was that all members of EPSB system who were involved with CRIB Project or who were identified by the Idealized Model as being required to be involved in a fully-implemented CRIB Project were included. Even though there was some duplication of comments, it would have been invidious to have resorted to a selection procedure unless some form of random selection could have been employed. For future studies it would seem likely that if projects of similar magnitude to CRIB Project were being investigated then the numbers of validators available to the researcher would be of the same order as in the present study. The recommendation would be that all of them be included as validators.

Just because so many comments were received from the validators, it cannot be assumed that this stage of the study was necessarily a success. The criterion of success must be how effectively these comments enabled the revision of the Idealized Model to take place in Stage III of the study.

Stage III: Revision of the Idealized Model

When all the available comments from the validators had been received, the Idealized Model was revised by the panel of revisers. The main effort of the panel was concentrated on the Section 4 role

descriptions of the Idealized Model.

In accordance with the techniques and rules for revision laid down in Chapter 3 (p.45), the role items were revised as was described in Chapter 4. They are given in their revised form in Appendix 3. The number in parentheses after many of the role items refers to the number of the role item in the original Idealized Model which most closely corresponds to the revised role item.

To a certain extent the revision process resembles the first stage of a Delphi Model operation (Sackman, 1974) where the initial responses of a questionnaire are used to re-draft the questionnaire in the expectation that it will now elicit, upon re-submission to the original respondents, a greater measure of consensus on the matters being surveyed. The goal of the Delphi Model is to draw respondents towards a common position, either by leading them to change their opinions or by finding the areas on which consensus can be obtained. The revision-resubmission cycle is repeated at least once and may be repeated several times. The difference between this approach and the present study is that the ultimate goal of Delphi is consensus; the aim of this study is an Idealized Model which most faithfully represents the validators' perceptions of a fully-implemented CRIB Project. The distinction is that in the present study there was no desire to force a consensus on the respondents but in Delphi consensus is the avowed objective. The Delphi technique is in some disrepute after an assessment by Sackman (1974) (which was commissioned by the Rand Corporation, the developers of the Delphi approach) showed that the process of re-submission of draft after draft led to a final position which

was such a distortion of the participants' views and original feelings that it was considered worthless.

There was one instance where a resubmission stage might have produced beneficial results. During the revision stage over forty new or drastically revised role items were produced. These role items might have been modified in the light of the comments obtained in a resubmission of the role items to the validators. Unfortunately, constraints of time and money precluded the insertion of this extra stage.

The four categories of revisions which were made in the Idealized Model role items were: A. Convergence of validators' comments; B. Divergence of validators' comments; C. Misinformation revealed; and D. Wording and written style of the role items. These categories will be discussed in turn.

A. Revisions due to convergence of validators' comments. These were the most common type of revisions. It was here **that** the design of the study showed its strength. The revisions in this category were efficiently and accurately made because it was the most informed people who were making the comments on which the revisions were based. A perusal of the comments on, say, Role Item 4.7 of Appendix 2 (which is reproduced in Table 21) leaves little doubt that the validators consider the appointment of Project personnel is not the responsibility of the Director of Curriculum Development but is the purview of the Supervisor of Science and Health. Similar comments on Role Item 5.1 of Appendix 2 (also reproduced in Table 21) leave little doubt that the validators

Table 21

Validators' Comments to Role Items 4.7 and 5.1 of Section 4 of the
Idealized Model

4.7 Director of Curriculum Development should exercise his responsibilities to ensure the appointment of high calibre Project personnel.

SCHOOLS PERSONNEL COMMENTS:

Best done by Supervisor of Science.

Leave some of these high-calibre people in the schools.

Difficult to broaden teacher base of project as high calibre personnel are limited in number.

(I) would feel that this is the task of the Science Supervisor.

CENTRAL OFFICE PERSONNEL COMMENTS:

Role of Supervisor of Science.

Or ensure that this is done.

Responsibilities in this regard are primarily that of the Supervisor. Would definitely play a minor role in appointment of personnel.

5.1 Director of Program Supervision should encourage the curricular associates and the consultants in their task of increasing and maintaining the most efficient use of the banks.

SCHOOLS PERSONNEL COMMENTS:

Should do so at a general level and more through praise.

Direct encouragement from Supervisor of Science and Health.

Possibly best done by Supervisor of Science and Health.

Through supervisors.

This assumes that CRIB is the number one priority in the system.

CENTRAL OFFICE PERSONNEL COMMENTS:

Supervisor should have major responsibility here.

Provide support.

feel that it is not the responsibility of the Director of Program Supervision to encourage curricular associates in their duties. Revisions of this type support the conceit of this study that by employing informed personnel to comment on an Idealized Model of a fully-implemented CRIB Project, the precision of the model will be enhanced. The fact that the validators are knowledgeable of CRIB Project gives, at least in those emendations based on converging comments, an authority to the suggested changes that probably could not come from a person or a team who were not conversant with the Project.

It would seem likely that the revisions in Categories A and C could have been reduced if the role descriptions had been more fully known during the compilation of the Idealized Model. There were, however, no relevant documents specifying role descriptions of Central Office personnel available to this researcher. Such greater specificity would have had to be balanced against the researcher's freedom to bring a broader and more implementation-oriented perspective to describing the roles in question. Fullan and Pomfret (1975) recognize this dilemma:

Although there is the need to increase the explicitness of innovations, there is the concomitant danger of over-determining the characteristics of the innovation. Complete specification of role behaviours may alienate users who perceive it as a top down "user proof" approach to change. Furthermore, many current innovations are complex and cannot or should not be specified prior to attempting implementation. (p.117)

B. Compromises due to divergence of validators' comments.

Even before the Idealized Models were mailed, it was evident from a perusal of the relevant documents and informal discussions that there

were differences of opinion among the validators. Some validators, for example, were in favour of computerization of the bank operation whereas others were not. Other areas of disagreement surfaced during the revision process. Obviously, two mutually exclusive role items could not proceed to the Stage IV questionnaires and so the panel had either to take a stance on one of the positions or to strike a compromise between them. The revisers supported the position expressed by the majority of the validators who commented on that particular item. An example where the validators' comments diverged occurred when the role of the Director of CRIB Project was revised. Some validators felt that this position should be abolished whilst others felt that the holder should have more responsibilities than at present. As the comments to Role Items 31.11 to 31.44 show (Appendix 2) the majority of validators who commented assumed that the role of the Director would persist. Part of the divergence on this particular role might have been due to the fact that while the title: "Director" identifies a middle-management position in EPSB system Central Office, the Director of CRIB Project is a curricular associate with special responsibility for CRIB Project. It is easy to see where some confusion may have arisen in the minds of validators who were not aware of the status of the Director of CRIB Project.

One of the most vexing instances of diverging opinion arose when the future role of the computer in CRIB Project was discussed. Upon reading the validators' comments to Role Items 10.1 to 10.8 (Appendix 2) the two stances are evident. Such comments as: "Computer facility must be available for continuous revision in

the banks" and "I realize computers have a place in our world - but I'm not so sure what that priority should be in terms of dollars for education" lie in uneasy juxtaposition. The principal objection to computerization was on the basis of cost and it seems likely that if the role items had been prefaced with some condition such as:

"Assuming the availability of funding..." then support for computerization would have been more positive. There was also some feeling that the current computer operation in Central Office is inappropriate to curricular activities such as CRIB Project. One validator was of the opinion that: "The current computing dept. is a business environment." Another comment suggested that a second and separate computer facility should be provided for curricular use. On the other hand, money and current computer operations aside, it is difficult to see how the objectives of CRIB Project could be fully implemented without the use of either computers or armies of secretarial helpers. A fully-implemented CRIB Project would be a very flexible operation with provision for incorporating feedback quickly and easily and with extensive records being kept so that needs for revisions can be quickly identified and acted upon.

According to the rationale developed for CRIB Project (and as reflected in the Idealized Model), it would seem that computer management of a fully-implemented CRIB Project is essential. In the Stage IV assessment of the current level of implementation of the role items, the standard against which current performance was measured was the Revised Idealized Model which in turn derived from the CRIB Project rationale. It follows, therefore, that when a decision had to be made whether to keep the concept of computers in the roles,

recourse was made to the CRIB Project rationale as the arbiter. This was the only instance where the opinions of the validators were so evenly divided that the revisers were required to return to the Project rationale.

In future studies employing this methodology, it might be possible to handle differently the presence of honestly held but divergent viewpoints. One possibility that suggests itself is the provision of branches in the Revised Idealized Model with the provision of correspondingly branched questionnaires in the Stage IV assessment of the level of implementation of the role items. If this were done, majority and minority reports could be written and the ultimate decision of which path to take could be left to the decision-makers.

C. Misinformation corrected. Mistakes in the Idealized Model were spotted by validators and brought to the attention of the panel. As was described in Chapter 4, no problems arose in setting these to rights. For instance, the position of the Director of Educational Data Processing had been dissolved during a reorganization just before the Stage II validation took place and so several Central Office validators pointed this out. There were very few instances of obvious mistakes of this nature; too many mistakes would probably have compromised the validators' respect for the thoroughness and accuracy with which the Idealized Model had been compiled.

D. Simplification and clarification of the written style. Since the wording for the role items reflected the documents from which they sprang, it was inevitable that some of them were slanted

towards CRIB Project. Funding proposals are noted for their bias. As an example, Role Item 6.1 reflected CRIB Project philosophy by maintaining that teacher participation in the writing sessions is "one of the highest forms of professional development available." Two validators indicated that this wording expressed bias. As a consequence, the panel removed this bias and in the revised version such writing of CRIB Project materials is held to be simply: "An avenue of professional development activity." If the bias had been omitted from the original role descriptions it would have caused less irritation among validators but it would have meant that the concept of letting the CRIB Project documents outline the Idealized Model had been subverted. Letting the bias remain caused one additional wrong: some validators thought that the bias came from this researcher and not from his sources. Consequently, comments such as: "Your bias is showing" cropped up occasionally. However, this did not appear to be a widespread problem.

Summary of Stages I, II and III

The first three stages of the study were concerned with the development of the Revised Idealized Model of a fully-implemented CRIB Project. This model served as a standard against which the current perceived level of implementation of the role items deemed necessary to a fully-implemented CRIB Project were measured. The Model constituted a standard somewhat different to the kind employed by Stake (1967) as one of the components of his judgement matrix. For Stake, standards are "benchmarks of performance having widespread reference value" and represent current performance levels against

which a program being evaluated can be measured and can be judged to be performing better, worse, or as well as the standard. In the current study the standard is an ideal: a fully-implemented CRIB Project. It was known in advance that the current level of implementation of the role items fell short of the standard and so the pass/fail element of comparing what is to what the standard decrees, is absent. The questions which the assessment attempts to pose are thus assumed to be less threatening than the traditional question of: "Does this program meet the standard that it is supposed to meet?" The question becomes one of information seeking: "Knowing that CRIB Project is falling short of its objectives, what are the areas of discrepancy between what is happening now and what this idealized representation of a fully-implemented Project says should be happening?" Such a change in emphasis from a judgemental use of standards to what might be termed an illuminative use of standards is in line with the approach to evaluation which maintains that the role of evaluation is to provide guidelines for further implementation. If these guidelines are to be as appropriate as possible, then the standard must be as accurate as possible. An accurate Idealized Model has been the aim of the first three stages of the study.

Stage IV: Methodology of Assessment

In this sub-chapter, the methodology of the Stage IV assessment will be reviewed. Attention is paid to those issues which govern the applicability of the technique developed in this study to other situations.

Numbers of Questionnaires Returned

One of the concerns in the design of Stage IV was how to boost the likelihood of obtaining at least 80% returns of the questionnaires so that the non-respondents could be ignored (Kerlinger, 1964). The EPSB system laid down several conditions which militated against a high response and so it was decided to keep the questionnaires short, pertinent, and interesting. The overall response rate of 82% would appear to justify the technique employed and pay tribute to the high degree of professional conscientiousness displayed by those members of EPSB system who were polled in Stage IV of the study.

Validity of the Questionnaire Results

Four sources of possible distortion of questionnaire response were discussed in Chapter 3 and in this section each source will be commented on in the light of the questionnaire responses which were obtained.

1. Distortion due to the desire to appear socially respectable. Such distortion would have shown itself by respondents

over-using the "High" or "Medium" response on Task 1 in order to appear as though they were implementing the role items more than they actually were. Superficial examination failed to reveal any such abuse. If such distortion took place it was probably slight and, since it would have been expected to be distributed uniformly among the questionnaire items, would not have been expected to alter the final ranking calculated on Task 1.

2. Distortion due to efforts to achieve personal or professional advantage in an evaluation situation. The manifestations of this type of distortion are the same as those discussed above. In this instance it was possible to check the numbers responding to certain role items against an alternative source of information. For example, 23 teachers reported contributing materials to the banks (Table 13, Role Item #3); this agrees with the figure of "no more than 25" which was provided by the Director of CRIB Project. Sixteen teachers reported participating in the summer writing sessions and this figure agrees with the 21 reported by the Director of CRIB Project. (Several writers have since become curricular associates or administrators.)

3. Distortion due to variation in the conditions of questionnaire completion. For this study this form of distortion was not considered a major factor since the questionnaire was short and was not concerned with the measurement of attitudes.

4. Distortion due to the format of the questionnaire. The formation of response sets was considered unlikely since the questionnaires were short and the items were presented in random

order. The fact that in the analysis of the multiple-respondent questionnaires none of the correlation coefficients between the rank orders on Task 1 and Task 2 was significant at the $\alpha = 0.01$ level and only one was significant at the $\alpha = 0.05$ level indicates that the respondents were distinguishing between the tasks and the result suggests that they may well have been distinguishing between the items on each task as well. The effect of a response set, had it existed, would have been reduced by the procedure of calculating a rank order from the Task 1 responses since such distortion as the over-use of one answer category by a respondent would have had the effect of merely adding a constant to the number used to calculate the rank order.

The validity of self-rating instruments must always be challenged. In the present study there was often no way to verify the perceived levels of implementation of the role items by the respondents on Task 1. In those few cases where comparisons with data from other sources were possible, the data from the questionnaires and those from the outside sources agreed reasonably well. This is in accord with the finding of Crowther (1972) who reported that in a questionnaire study the majority of teachers surveyed rated themselves as implementing an educational innovation to the same degree as did an independent observer. In those cases where there was disagreement, it was never by more than one division on the Likert scale of the questionnaire.

Utilization of the Results of the Stage IV Assessment

Wergin (1975) classified approaches to evaluation as being of three types: extrapolicy approaches, which share the general assumption that evaluation results will determine the future course of the program; suprapolicy approaches which are judgemental in nature; and intrapolicy approaches, which are "characterized by the conviction that evaluation should be a component of program development and should therefore be undertaken to serve the needs of the decision makers." This study was an attempt to develop a procedure for carrying out an intrapolicy evaluation and its purpose was to develop guidelines in the form of recommendations which, if the decision to follow them was taken, would lead to the further implementation of the role descriptions of those personnel who would be involved with a fully-implemented CRIB Project. Throughout the study thought was given to increasing the probability that the results would be utilized by the decision makers. Weiss (1972) lists five constraints which frequently limit the use of evaluation results. The first constraint is the evaluator's perception of his role in the utilization process. Too often, Weiss feels, the evaluator has no commitment to seeing that the evaluation report is used. She suggests that sometimes a useful "middleman" is a highly-placed member of the organization which commissioned the evaluation and who took part in the evaluation himself. Such an individual, Weiss suggests, is in a position to know the substance of the report and promote the taking of decisions within the organization. Informing the decision-makers has been a concern of this study;

the employment of senior administrators as validators in Stage II and as respondents in Stage IV was a deliberate attempt to try and ensure that the decisions which must be made concerning CRIB Project will be made by administrators who are conversant with the aims of the Project and the issues involved in their achievement. It is beyond the scope of this study to follow the future decisions as they are made.

Weiss's second constraint concerns the organization's resistance to change. This thorny problem has no simple solution although ensuring that the evaluation results receive a hearing from the decision-makers is one suggested remedy. One of the ways to achieve this, Weiss suggests, is the "involvement of staff members in planning and conducting the study" and this was the way chosen in the present study.

The third constraint is the inadequate dissemination of results. The problem of shunting aside evaluation results is greatest when the findings are unpalatable. However, if the results are available and are known to be available, they may well be sought out when the time comes to make decisions. As Weiss says:

We are learning in our studies of research utilization that it is fruitless to try and cram research results down the throats of people who are uninterested. On the other hand, when people face a decision, they often search for relevant information. Even if they are seeking information to bolster a preconceived viewpoint, the dissemination system serves a useful function. By arming decision-makers whose views coincide with research results with persuasive ammunition to fight their case, the system gets research a hearing - and a partisan. (p.124)

The decision makers who helped in the study will know that the results are available and, in addition, will have a good idea of

the form the results will take.

The gap between evaluation findings and clear courses for future action is Weiss's fourth constraint. Her suggestions for bridging it include pointing out the shortcomings in the project under study and formulating suggestions to overcome them. Recommendations, she feels, do not have to be followed, but if a decision-maker decides to spurn a recommendation, he is not absolved from studying the data on which it was based.

Finally, Weiss suggests that the tendency of much evaluation to show little or no positive effect constitutes a constraint to the best use of evaluation findings. As she suggests, "the proclivity to the negative probably makes sophisticated program administrators and practitioners increasingly wary of the 'contributions' of evaluation." (p. 127) It may be, of course, that the program being evaluated is no better than its predecessor. However, it is also possible that the evaluation instrument is not picking up the differences. It is possible, too, that the program is not sufficiently well established, compared to the "traditional" program, to have had the chance to work its improvements. In the present study, the delimitations have resulted in no measures of student outcomes being taken; the differences that have been found relate to incomplete implementation of role items deemed necessary to a fully-implemented CRIB Project. The differences have been revealed in this study, but they are differences from an ideal, not from a competitor.

Guba (1975) has also addressed the problem of ensuring the

utilization of the results of an evaluation. He covers much of the same ground as Weiss but in addition he suggests that the criteria of validity, reliability and objectivity of the findings contribute to the utilization of the results of the evaluation. He means that a client must have confidence in these criteria in order to accept the evaluation findings. Validity is a measure of how faithfully an instrument is measuring what it purports to measure. In this study there are two issues to be considered. The first is the issue of how valid are the results of this particular study and the second is the more general concern of how valid a methodology of evaluation for middle-budget programs has been developed.

The nub of the first issue is the validity of the questionnaire results obtained on Tasks 1 and 2 in the Stage IV assessment. Task 1 was the rating task where respondents were asked to rate their current level of implementation of the specific role items on a four-point scale. It was shown in the earlier discussion on the validity of questionnaire data (p. 159) that there was some reason to feel that the respondents were responding accurately to the task but that such a claim could not be proved with the evidence at hand. It remains evident that the validity of the responses would have been enhanced if confirming data could have been obtained more widely from other sources. This was not possible and the absence of such support must temper the reader's assessment of the validity of the results.

On Task 2, respondents were asked to rank the importance of the role items to a fully-implemented CRIB Project. Here the threats to validity would appear to be less. There was no personal commitment of the respondents at stake since they were being asked

to consider an idealized situation. The only real concern was that the rankings on one task might influence the respondent to answer in the same way on the second task, even though the purposes of the two tasks were very different. However, in no case where a Spearman correlation coefficient could be calculated was there any significant correlation between the rank orders on the two tasks when $\lambda = 0.01$ and only one instance of significance at $\lambda = 0.05$.

When the validity of the evaluation methodology itself is considered, the question of the generalizability of the technique developed in the study becomes important. There would appear to be no fundamental reason why the technique could not be applied to similar innovations or projects in other situations. One factor affecting the generalizability of the approach is the validity of the technique of using personnel connected with a project to speculate on how it would appear if it were fully implemented. It has the advantage of economically tapping the most informed sources of information; it appears to increase the likelihood of receiving a good response from the validators because a commitment to the project under study is there; it offers chances for the utilization of the results through the intercession of those senior administrators who participated in the study. Opposed to that, there is the possibility of a bias entering the responses. Steps can be taken to guard against that; some, such as incorporating validators who were not committed to the project, were used in this study and it seems possible that further controls could be built in to subsequent applications of the technique.

The reliability of the data is unknown. Hemphill (1969) indicates that this is a characteristic of many evaluations. Doubtless, if the study were to be repeated at a later date different data would emerge. Whether this would reflect the reliability of the data-gathering instruments or whether it would be caused by the ever-changing relationships between a changing CRIB Project and the changing personnel of a changing school system would be hard to say.

The objectivity of the evaluator must be considered in any evaluation. In this study the researcher made all efforts to maintain his dispassionate stance, although he never concealed his interest, or that of his supervisor, in CRIB Project. He feels that it is possible for an evaluator to maintain a clinical disinterestedness although how well he succeeded in this study is not for him to say. Rather, it should be a factor to be weighed by the clients of the evaluation. One point should be made: if bias towards or away from CRIB Project were present in the mind of the researcher, how would it manifest itself? Nowhere in the study is a judgement made or called for on the worth of CRIB Project. All that the study has attempted to do is to suggest to decisionmakers ways in which the gap between the fully-implemented CRIB Project of the Revised Idealized Model and the perceived level of current implementation of the role items can be narrowed. It is hard to see where bias on the part of the researcher could insinuate itself, and to what end, but the findings should be considered in the light of the evaluator's interest in CRIB Project as a worthy curriculum innovation in science education.

Current Level of Implementation of the Roles of CRIB Project with
Recommendations for their Further Implementation

In the final sub-chapter of Chapter 5, the findings of Stage IV of the study will be reviewed and recommendations for the further implementation of the role descriptions of EPSB system personnel involved with CRIB Project will be presented. It will be recalled that the role items whose levels of implementation were being assessed in Stage IV derived primordially from the rationale and objectives of CRIB Project. The changes brought about by the validation and revision stages did not vitiate the role descriptions since the validators and revisers were reacting to an Idealized Model of a fully-implemented CRIB Project and not to any current level of implementation of CRIB Project. The recommendations which emerge from the following discussion are predicated upon the Revised Idealized Model being held as the standard against which any assessment of current implementation must be made. It was not the purpose of this study to evaluate CRIB Project rationale and objectives; this task remains for another researcher, preferably a professional external evaluator, to perform.

The discussion first considers the results obtained from the multiple-respondent questionnaires and then the results from the single-respondent questionnaires.

Tasks 1 and 2 on the Multiple-Respondent Questionnaires

In Task 1 the respondents were required to consider each of the role items describing their position with EPSB system and to rate the level of attention they are currently giving it. This measure was then converted to a rank order, as was described in Chapter 4. In Task 2 the respondents were required to rank the same role items from highest to lowest in the order of perceived relative importance for their position, assuming that CRIB Project had been fully implemented. The results from the two tasks can be used in two ways.

First, by using the measure of congruence and incongruence established in Chapter 4 it is possible to find intuitively those role items which are incongruent with respect to the two tasks. Incongruence can arise when the perceived current level of implementation (Task 1) is assessed as being in accord with the level stipulated in the Revised Idealized Model but the perceived importance to a fully-implemented CRIB Project is not, or where the perceived current level of implementation (Task 1) is assessed as not being up to the level stipulated in the Revised Idealized Model but the preceived importance to a fully-implemented CRIB Project is.

The second use to which the results can be put is in identifying those role items which are currently perceived as not being implemented and are not judged important to a fully-implemented Project. Such congruent role items can reveal areas where the perceptions of the role holders concerning the importance of the role items is in conflict with those expressed in the Revised Idealized Model.

Either of these two ways of viewing the Stage IV results can give rise to recommendations. These recommendations are designed to

explore the regions of discrepancy between the Revised Idealized Model and the perceptions of the Stage IV respondents with a view to finding reasons for the discrepancy and prescribing ways of eliminating them.

An estimate of the state of implementation of an innovation can be obtained by comparing the extent to which those involved (users, facilitators, developers and maintainers) are performing the role behaviors which are specified, implicitly or explicitly, by the innovation. If these role holders are carrying out the role behaviors which are necessary to a fully-implemented project then that project has been implemented. Conversely, if the role behaviors are not being performed, or are being partially performed, then the innovation has fallen short of being fully implemented. There are essentially two possible circumstances which can be present if an innovation has been found to be incompletely implemented. First, the required role behaviors are known by the participants but are, for some reason, not being performed by them. Second, the required role behaviors are not known or are misunderstood by the participants who have formed their own conception of the required role behaviors and are implementing those.

The results obtained from the analysis of the Stage IV multiple-response questionnaires suggest that in several instances the second circumstance may pertain. Table 13, p. 113, showed the ranks given by teachers on Tasks 1 and 2. The teachers often report they are currently implementing (Task 1) the specified role items in accordance with their perceptions of the level of importance of these role behaviors to a fully-implemented CRIB Project (Task 2). They feel, for example, that using the bank

materials is the most important role behavior for a fully-implemented CRIB Project and it is this role item which they are currently performing the most. There are other instances, however, where the teachers' perceptions of the importance of the various role items to a fully-implemented CRIB Project were found to be at variance with those of the original developers of the Project. Nay (1973, 1975) and Roberts (1973) have pointed out that the use of bank materials, while a very important aspect of CRIB Project, represents only the first level of involvement of teachers and that what they term the higher levels come when the teacher is involved with providing feedback on the materials used or with writing new materials with colleagues in writing sessions. The objectives of CRIB Project reflect this attitude. There appears to be a gap between the teachers' perceptions of their role in a fully-implemented CRIB Project and the conception of this role in the Revised Idealized Model. The facilitators must examine areas of discrepancy such as these and attempt to find the reason for the low level of implementation of the role items. Perhaps the Revised Idealized Model is unrealistic in its description of the role items. If the facilitators decide this, either on their own cognizance or through the findings of an evaluation of CRIB Project rationale and objectives, the model must be recast in the light of the new objectives and rationale, and a further Stage IV assessment of the level of implementation must be carried out. If the role items are still applicable, explanations must be found for the lack of full implementation and efforts must be made to overcome any

stumbling blocks. Perhaps the role holders are unaware of why a certain role item is important or perhaps they know that it is important but lack the means to implement it.

The technique of assessment developed in this study serves to divide the major and broad decisions (such as whether to expand, reduce or keep constant the support for CRIB Project) into many smaller but more specific ones. The facilitators can study the Task 1 and 2 comparisons and identify those areas where choices need to be made. As an example, using incongruence as the evidence of shortfall from the Revised Idealized Model, the sequence of moves for Role Item #7 for Curricular Associates (Table 15, p. 118) could be:

1. The Incongruence Curricular associates report that helping teachers use the banks is an important role item for a fully-implemented CRIB Project but their perception is that this role item is currently not being highly implemented.
2. The Choice Is the role item important to a fully-implemented CRIB Project? If YES, then why are they not implementing it more fully? If NO, why do curricular associates feel that it is important?
ASSUME THE CHOICE IS YES
3. The Stumbling-Blocks Why is the role item incompletely implemented? Possibilities which present themselves are:
(i) Curricular associates have insufficient time.
(ii) Curricular associates are prevented from doing this by someone. If so, by whom?
(iii) The teachers having difficulties with CRIB Project materials do not know to ask the curricular associates for assistance.
ASSUME THE CHOICE IS (i)

4. The Remedy (i) Free them of more teaching duties
(ii) Free them of some other curricular
associate duties. (For instance, according
to Role Item #8, Table 15, curricular
associates might be profitably relieved of
the duty of field-testing new materials
since this is not perceived as being
important to a fully-implemented CRIB Project)
ASSUME (i) IS SELECTED
5. The Steps to (i) Inform and discuss with appropriate
be Taken by personnel ways to free curricular associates
Facilitators to implement the role item more fully
(ii) Inform and discuss with curricular
associates
(iii) Arrange for others (teachers?) to
field-test new bank materials.

This manner of proceeding would use the information of the study to identify problem areas, to help reveal stumbling-blocks to further implementation of the role items and to suggest possible remedies.

The results of the analysis of the multiple-respondent questionnaires revealed several important areas where decisions are required from EPSB system personnel if the further implementation of the role items deemed necessary for a fully-implemented CRIB Project is to take place. To highlight these, a series of recommendations follows; each of these is accompanied by an explanation of how the analysis revealed the need for the recommendation. The basis for all the recommendations was the Revised Idealized Model which represents how CRIB Project would look if all its objectives had been implemented. The objectives and rationale form the standard; no judgement on the merit of these is made.

Recommendation 1

That an investigation be conducted to determine the reasons for the differences between the teachers' perceptions of their role in a fully-implemented CRIB Project, namely the provision of feedback on the use of bank materials and the contribution of new materials through writing sessions, and the role ascribed to them in the Revised Idealized Model.

This recommendation arises from the results (Table 13, p.113) which show that teachers do not perceive themselves as currently implementing those role items concerned with the provision of feedback on the use of bank materials (Role Item #7) and the contribution of new materials through participation in writing sessions (Role Item #4). Since the teachers do not appear to perceive the role items as being important to a fully-implemented CRIB Project, it would seem that the reasons for these perceptions should be found since such participation by teachers is a cornerstone of the Revised Idealized Model.

Recommendation 2

That the teachers of junior high school science be provided with the opportunity to attend meetings designed to foster participation in the feedback and writing activities of the Project.

It would appear from Role Item #5, Table 13, that teachers perceive this role item as being important to a fully-implemented CRIB Project since it received a rank of 3 on Task 2. In this case, opportunities should be provided (for example, release time from classroom duties, scheduled work sessions) for teachers to attend

liaison meetings to foster participation in CRIB Project.

Recommendation 3

That school administrators interact more fully with CRIB Project staff and science teachers in their own schools in order that they may acquire a greater understanding of the objectives and rationale of the Project.

Table 14, p. 116, shows that school administrators indicate that they are aware of CRIB Project (Task 1 Rank = 1) but they do not appear to be very familiar with the Project rationale (Task 1 Rank = 5). Specifically, it seems that school administrators feel that they are not "sufficiently familiar with the rationale of the Project to understand how it resembles and differs from other curricular innovations" (Role Item #1) and are not "bringing CRIB Project to the attention of their science teachers" (Role Item #3). Administrators appear to be saying that they are insufficiently informed of the Project and this is borne out by the fact that the greatest number of free-response comments in Task 3 of the questionnaire for this group referred to the need for fuller interaction between themselves and CRIB Project staff (Table 19, p. 126).

Recommendation 4

That school administrators be encouraged to facilitate to a greater degree than at present the provision of release time so that their teachers may participate in such curriculum development activities as the writing of materials for the CRIB Project banks.

Two role items in Table 14 (p. 116) which were classified as

incongruent were concerned with the school administrators' understanding that the "rationale of the Project encourages teachers to participate in group writing sessions" (Role Item #2) and their awareness that "participation in the group activities of the Project may require release time for the teachers concerned." (Role Item #9) The school administrators appear to be indicating that their awareness and understanding of these role items is not important to a fully-implemented CRIB Project; they are not saying that the writing sessions themselves, along with the required release time, are unimportant to a fully-implemented CRIB Project. Indeed, in their Task 3 comments (Table 19, p. 126) the provision of teacher release time was seen by school administrators as being one of the most important conditions for a fully-implemented CRIB Project which was not currently available.

Recommendation 5

That a study be made to establish why school administrators do not feel that a part of their role is to encourage non-users of CRIB Project to become users.

The results in Table 14 (p. 116) for Role Item #6 indicate strongly that school administrators do not see their role as encouraging non-users to become users or to influence the adoption of innovations such as CRIB Project by their teachers. Even though they feel that it is important to be aware of CRIB Project and they appear to appreciate its benefits, they do not perceive their role as prime movers in the installation of innovations such as CRIB Project but more as facilitators in the innovation process.

Obviously, the principal of a school can shape the attitudes of his or her teachers to at least some extent. Accordingly, since encouragement of non-users to become users is part of CRIB Project rationale, ways should be explored where administrators could influence their staff without running the risk of appearing to be operating in the power-coercive mode which they indicate in Table 14 that they have eschewed.

Recommendation 6

That the role of the curricular associates in science as it applies to CRIB Project be more rigorously specified.

Curricular associates indicated (Table 15) the greatest degree of incongruence between Tasks 1 and 2 of any of the multiple-questionnaire groups. There does seem to be a lack of clarity concerning the role of the curricular associate in a fully-implemented CRIB Project. Since the curricular associate plays a very important role as liaison between the Project and the teachers in the schools, it would seem essential that steps be taken to clarify exactly what he or she should be doing.

Recommendation 7

That more time and resources be made available for curricular associates to pursue their role of liaison between teachers, administrators and CRIB Project.

Curricular associates indicated (Table 15, p.118) that

they felt they were currently participating in writing sessions (Role Item #3) and the field testing of new Bank materials (Role Item #8) but that neither of these two role items was very important to a fully-implemented CRIB Project. The CRIB Project rationale does not specify that curricular associates must be producers of materials but rather it insists only that CRIB Project materials should be produced by all teachers. The curricular associates did feel that for a fully-implemented Project they would need to attend meetings during the school year and help teachers who are having "difficulty with either the physical or conceptual aspects of the bank operation." Curricular associates, it appears, see their role as being one of liaison between the Project and participating teachers rather than one of active participation in the development and testing of materials. The Task 3 free-response comments (Table 20, p. 128) bear this out: the three most frequent comments refer to liaison activities as being necessary to a fully-implemented CRIB Project but not being currently available. In the light of these findings and remembering that school administrators felt the need for greater interaction with CRIB Project staff, it would appear that there is scope for improving the liaison between CRIB Project staff and the schools.

Recommendation 8

That ways be explored to improve communication between the Instructional Media Centre personnel and CRIB Project personnel in order that each may better serve the other.

Table 16 (p.120) suggests that the I.M.C. personnel feel

that their role was to be aware of the types of audio-visual material used and needed by CRIB Project (Role Items #4 and #6) but that it was not their role to inform CRIB Project of these matters (Role Items #1, #2 and #3). They appear to feel that it is up to CRIB Project personnel to avail themselves of the services which are provided by I.M.C. The rationale of CRIB Project suggests that the service departments such as I.M.C. should take a more active role in communicating changes of status of their materials to CRIB Project. The level and nature of the involvement of I.M.C. in curriculum projects such as CRIB Project needs to be examined so that maximum benefit accrues both to the curriculum projects and to I.M.C.

Task 1 and 2 Comparisons for Single-Respondent Questionnaires

The returned single-respondent questionnaires were examined in Chapter 4 under the three categories of respondents: Director rank or above; not of Director rank or above who are currently involved to some extent at least with CRIB Project; not of Director rank or above who are currently not involved with CRIB Project. The purpose of this grouping is to cluster respondents according to their anticipated type and extent of involvement with CRIB Project. Only one change is made in this section of the discussion: the responses of those of Director rank or above are treated third rather than first, as they were in the Results chapter, because certain recommendations for this category are contingent upon the discussion of the results of the other two categories.

Responses by those below Director rank and currently connected with CRIB Project. Although this group consisted of only two members, it contained some of the EPSB system personnel who are and have been most active in promoting and establishing CRIB Project. As the analysis of the results indicates (p. 133) it appears that there was good congruence between the Task 1 (Current level of attention) and Task 2 (perceived importance to a fully-implemented CRIB Project) although no formal calculation of rank was possible. The role items for these respondents were much more specific and directed towards CRIB Project than were those for senior administrators. Owing to their preoccupation with current activities of CRIB Project, there is some direction of emphasis needed towards the long-range requirements of the Project.

Recommendation 9

That EPSB system personnel in this group begin to participate in designing strategies for the evaluation of the rationale and objectives of CRIB Project and its impact on student learning and attitudes towards science.

This recommendation is seen as necessary because the respondents in this category indicated that they were at present not very actively involved in evaluating the effect of CRIB Project. It would appear inevitable that such an evaluation will be required in the future and it would appear to be important that these members of EPSB system with their extensive knowledge of CRIB Project be involved in designing and conducting the evaluation.

Recommendation 10

That the title of Director of CRIB Project be changed so that those not conversant with CRIB Project do not confuse the status of the position with that of Director rank.

In the Stage II validation several respondents who were learning of CRIB Project for the first time indicated that a Director was an appointment too high in rank for the requirement of supervising CRIB Project. The confusion would seem to have arisen from the title applied to the present manager of CRIB Project.

Responses by those below Director rank who are currently NOT connected with CRIB Project. In this category fall the responses made by members of the Directorate of Information Services and the Supervisors and Consultants of reading and mathematics. It was within this group that the lowest level of current implementation of the role items was noted. On Task 2 most respondents anticipated no further involvement with CRIB Project.

As was discussed above, one of the unresolved divergences of opinion among respondents in all categories is the future role of the computer in CRIB Project. In EPSB system the computer facility is operated by the Directorate of Information Systems. It was anticipated that the responses of members of this branch would illuminate the discussion of the role of the computer in the full implementation of CRIB Project. It must be surmised from the limited information obtained from the responses that the members

of the Directorate do not foresee their involvement with CRIB Project as being very substantial. Whether this level of response is the result of a considered judgement or a lack of familiarity with curricular innovations of the type represented by CRIB Project must be left to some future investigation. The following three recommendations do not reflect the present thinking of the Information Systems Branch and so some groundwork is anticipated as being required before their implementation can be achieved.

Recommendation 11

That a study group comprised of members drawn from Central Office facilitators, CRIB Project staff, members of the Directorate of Information Systems and outside consultants versed in computer management of curricular activities be formed.

Recommendation 12

That this group draw up a master plan and cost estimates for the transfer of the operation of CRIB Project to a computer facility which allows access to the banks from terminals in the schools.

Recommendation 13

That this group transfer and provide for the subsequent maintenance of CRIB Project in a computer facility.

These recommendations derive mainly from CRIB Project rationale. If the Project is to possess the flexibility and the capability of incorporating ongoing revisions which its proponents emphasized in the rationale and in the literature (Nay, 1973, 1975 ;

Roberts, 1973) then there would appear to be no other way of achieving the goal of flexibility except by means of a computer system with facilities in every junior high school. The validators in Stage II were not unanimous in advocating the use of computers but these recommendations have been made because they derive from the rationale and objectives of CRIB Project and because they were mandated by approximately half of the validators who commented on the use of computers in CRIB Project.

Other members of this group of respondents to single-respondent questionnaires appeared to be unfamiliar with CRIB Project and, not unnaturally, were somewhat at a loss to know how to respond. For the most part they indicated that they had no involvement with the Project at the moment and did not anticipate having a great role in a fully-implemented CRIB Project. It is most apparent that great efforts of communication will need to be made before such personnel become part of a fully-implemented CRIB Project. The following recommendation is directed towards that end.

Recommendation 14

That ways be explored to improve communication between Library Services personnel and CRIB Project personnel in order that each may better serve the other.

As was the case with the recommendation concerning the participation of I.M.C. (Recommendation #8), the level and nature of involvement by Library Services personnel in curriculum projects such as CRIB Project need to be examined so that the maximum benefit

accrues both to the curricular projects and to the Library Services.

Responses by those of Director rank or above. The six respondents in this group indicated that they were implementing more than half of the role items for their positions and that it was these role items which they considered the most important for a fully-implemented CRIB Project. While no measure of congruence or incongruence could be calculated for responses to single-respondent questionnaires, it appears that, in the general terms perforce employed in the analysis of these questionnaires, there is a good congruence between Task 1, the perceived level of implementation, and Task 2, the importance to a fully-implemented CRIB Project of the role items.

The question arises of why, in the light of this perceived congruence between Tasks 1 and 2 for the group containing most of the influential decision-makers, CRIB Project is not already more fully implemented. One possible reason might be attributable to the fact that many of the role items which evolved from the Stage III revision and formed the Stage IV questionnaires did not emphasize CRIB Project in any specific way. The validators in Stage II had indicated clearly that the senior Central Office personnel were not in a position to favour CRIB Project over the other curricular innovations in the system, even if they wanted to. Accordingly, many role items were of the type: "Allocate a priority level for CRIB-type projects." (Role Item 3.3, Appendix 3) With role items couched in these terms it would be quite in order for the respondent

to indicate that he or she was fully implementing this role item, even if the priority allocated to CRIB Project was very low. Obviously, a commitment from the senior administrators to CRIB Project is essential for its full implementation but it is certain that such a commitment will not be given blindly. If CRIB Project is to obtain, say, a high priority for resources, then the decision-makers will require reasons why this should be so. Among such reasons could be the inherent worth of CRIB Project, the lack of any better projects to support, the prestige which would redound to the system in the event of favourable publicity for and public reaction to CRIB Project, and political pressures from below, above or outside. These pressures were recognized in Section 3 of the Idealized Model: CRIB Project is Examined. The schematic representation (Figure 1, Appendix 1, p. 61) shows, by linkages 14, 15, 12, 18 and 27, the directions from which benefits can accrue to the facilitators from the working of CRIB Project. The questionnaires were not detailed enough to determine the extent to which senior levels of administration are in fact, or perceive themselves to be, supporting CRIB Project; all that could be established was that the mechanism for providing such support was perceived to be in place, whether or not it was being used.

In order for CRIB Project objectives and rationale to be more fully implemented, two requirements would appear to be necessary. The first is that a sufficient structure for CRIB Project be part of the organizational setting of Central Office. Accordingly, a recommendation to this effect is made.

Recommendation 15

That a permanent organizational structure be provided for CRIB Project so that it may become a permanent part of Edmonton Public School Board system.

This arises from three comments made by Central Office respondents to single-respondent questionnaires; two respondents were in the category: Director rank or Above, and the third was in the category: Below Director rank and connected with CRIB Project. The three comments expressed the view that one of the conditions required for a fully-implemented CRIB Project and which was currently not available was a permanent organizational structure for the Project.

The second requirement that would appear to be necessary for the fully-implemented CRIB Project is that the structure set up as a result of Recommendation 15 is used by senior administrators to give support to CRIB Project. This leads to the final recommendation.

Recommendation 16

That the senior administrators of EPSB system who have authority over curriculum developments use the lines of communication and authority already available to encourage their subordinates to implement the previous recommendations.

This recommendation recognizes the significance of the role of the senior administrators in the attainment of the full

implementation of any innovation in the system. Without this support the impetus for full implementation will not be present. If the administrators feel that CRIB Project is an important, appropriate and productive innovation, they should lend their encouragement. If they are unable to decide on the worth of the rationale and objectives of the Project they should commission an evaluation to determine independently the value of CRIB Project objectives and rationale. In either case, if the decision is taken to implement CRIB Project further, it is hoped that this study and the recommendations herein will aid them in their goal of achieving a fully-implemented CRIB Project.

CHAPTER 6

SUMMARY AND IMPLICATIONS

The Study

The study concentrated on two main areas. First, an assessment was made of the current level of implementation of the role descriptions of personnel involved with a curriculum innovation, The Curriculum Resources Information Bank (CRIB) Project, in the Edmonton Public School Board (EPSB) system. Second, in order to perform the assessment, an evaluation strategy was developed which was designed to be applicable to the assessment of level of implementation of role descriptions of personnel involved in other middle-budget innovations. The assessment was made using as a standard an Idealized Model of the innovation which attempted to represent how the innovation would appear if all the Project objectives had been fully implemented.

Assessment of Level of Implementation of CRIB Project

The study proceeded through four stages. In Stage I an Idealized Model was developed. This model was based on the rationale and objectives of the Project and on a review of the related literature of curriculum development and implementation theory. It was designed primarily to describe how CRIB Project personnel would be performing their roles in relation to the Project if all its

objectives were being fully implemented. Since the model referred to a fully-implemented CRIB Project and not to how the Project was operating at the current time, it was termed "idealized". The model took the form of a document in four sections; each represented a progressively sharper focus on the Project with Section 4 being a set of itemized role descriptions for all those members of EPSB system which the Idealized Model identified as being necessary participants in a fully-implemented CRIB Project. Eighteen roles were identified in this way.

In Stage II a copy of the Idealized Model was sent to each of 50 validators. Validators were members of EPSB system who are currently or have been involved with CRIB Project or who are concerned with the implementation of curricular innovations in the system. They were asked to suggest ways in which the Model could better represent a fully-implemented CRIB Project within the surroundings of EPSB system. The validators supplied over 700 comments on the 44 returned Idealized Models. They directed the majority of them to the itemized role descriptions.

In Stage III the Idealized Model was revised in the light of the comments received from the validators. Since the validators' comments were mainly directed towards the role descriptions, the revision stage was concentrated on the fourth section of the Model. It was found that the comments from the validators could indicate areas where the perceptions of the compiler of the Idealized Model were at variance with those of personnel of EPSB system. The Model was amended to incorporate the perceptions of the validators. Areas of disagreement among the validators' comments also arose, mainly

when comments were being made on those areas of the Model which currently are not part of CRIB Project. Examples were the role of the computer in a fully-implemented CRIB Project and the role of the Project Director. One of the concerns of the researcher had been that a validator might have used the opportunity to indulge in self-aggrandizement by commenting that his or her role was more important to CRIB Project than it really was. No evidence of such behavior was found.

In Stage IV the role items which were revised in Stage III were transformed into questionnaire items. Eighteen questionnaires were constructed, one for each of the identified roles, and these were dispatched to the 259 members of EPSB system who had been identified in the Idealized Model as being required to participate in CRIB Project if it were fully implemented. The recipients of the questionnaires were asked to rate the role items appropriate to their position in the school system on the perceived level of implementation at the present time and then were asked to rank the role items in order of importance to a fully-implemented CRIB Project. They were also encouraged to add free response comments on the appropriateness of the role items to their positions, and on those conditions necessary to a fully-implemented CRIB Project which were presently available or, alternatively, were not available in the system. From an analysis of the returns it was possible to establish how well the role items of the Revised Idealized Model were perceived as being implemented currently, compared with how important the respondents considered them to be for a fully-implemented CRIB Project. The results showed that while many role items were being implemented

according to their importance to a fully implemented CRIB Project, others were not. For example, teachers felt that use of the banks for planning lessons was an important item for full implementation and this was the item they considered as being currently the most implemented. On the other hand, teachers felt that the contribution of new bank materials was important to a fully-implemented CRIB Project but indicated that this role item was not perceived as being very fully implemented at present. From the free-response task on the questionnaires, it emerged that most respondents thought that the role items for their position were, on the whole, appropriate. They also felt that the chief reason for the lack of full implementation of CRIB Project was the lack of time off in which to carry on the activities required of them. In the light of the analysis of the results, 16 recommendations were made for the greater involvement of ESPB system personnel so that the achievement of a more fully implemented CRIB Project may be brought about.

Methodology Developed in the Study

The methodology was designed to enable an evaluator with a small amount of resources to use the talents, skills and knowledge of the members of the school system who were connected with the Project so that the current level of implementation of the roles of the Idealized Model could be assessed. Two benefits accrue from this method: first, in Stages I, II and III a detailed description of the roles of the personnel in a fully-implemented CRIB Project were obtained and, second, in Stage IV an assessment was made of the present and expected future fulfillment of these roles.

The cornerstone of the methodology is the construction of an idealized model in Stage I. In the present instance, it was possible for the researcher to employ extensive documentation from the EPSB system files in order to cast a representation of a fully-implemented CRIB Project. In other situations it might happen that no documentation exists and the researcher would then have to expend more effort in ascertaining the hidden or assumed characteristics of the innovation under study.

The strategy in Stage II consisted of having the members of the system concentrate their attention on validating an Idealized Model of the fully-implemented CRIB Project rather than on the current state of implementation. In this way it was hoped that the expertise of the validators could be utilized without the taints of bias which might have accompanied any assessment of the current state of implementation of the project. The results of the study suggest that, provided sufficient cross-checks on the data collected from the validators are available, the strategy can be useful and productive in the validation of an idealized model. If this technique was applied to a larger project it might become necessary to employ sampling techniques in order to arrive at a number of validators which would ensure sufficient feedback but would not result in the researcher being swamped with a surfeit of comments.

The Stage III revision process was conducted by a panel of two revisers. While in the present study it was felt by the revisers that, because of the strict code laid down in advance of the revision stage, they had little room for manoeuvring, it might be possible in further studies to expand the size of the panel. Then one half of the

panel could either check the revisions of the other half or arrive at an independent set of revisions which could then be compared with those of the other half.

In the final stage of the study, Stage IV, the current state of implementation of the role items was compared with those specified in the Revised Idealized Model from Stage III. By means of the questionnaire technique which was employed only perceived levels of implementation of the role items were measured. If it was required to assess the true state of implementation of the role items of a project, it would be necessary to incorporate independent observational data into the Stage IV assessment. In the present study the perceived level of implementation of the role items was compared with the perceived importance of the role items to a fully-implemented project. Because the two tasks were so different in character, one being a rating task and one being a ranking task, it was not possible in this study to conduct a statistical comparison of the scores on the two Tasks and the judgements of incongruence and congruence were made on an intuitive basis. It should be possible, perhaps by expanding the number of tasks on the questionnaire, to devise techniques of collecting Stage IV data which would allow direct comparison of the perceived level of current implementation of role items and the perceived importance to a fully-implemented project. The recommendations which emerge suggest ways of overcoming incongruence and shortfall from the revised idealized model of Stage III.

Suggestions for Further Research

1. Range of applicability. Other assessments of the state of

implementation of idealized role descriptions for personnel connected with other projects should be made using the four-stage technique developed here. These studies should address:

(i) How large or small a project can be assessed in this way?

(ii) What range of innovations, including non-curricular innovations, can be assessed by this technique?

2. The validity of the responses given by those members of the system who know the project being investigated and who have been chosen as validators of the Idealized Model, needs to be ascertained. Ways of cross-checking the data need to be found. Suggested ways are:

(i) To incorporate among validators personnel who have no contact with the Project and compare their responses to those of the other validators. If there are differences, establish what they are and why they occur.

(ii) To conduct in-depth interviews with selected validators to ascertain the reasons why they hold the views which they do hold.

3. Research should be conducted into alternative techniques of collecting Stage IV data, such as by structured or non-structured interview, to see if they perform more effectively the task of collecting data on respondents' current perceived level of implementation of the role items. The data collection in Stage IV need not be done by questionnaire since the use of this technique is not crucial to the methodology as a whole. If other methods are chosen, factors of cost appear since interviews are more costly to perform and as a result, may take the evaluation strategy out of the realm of low-cost evaluations.

4. A study should be conducted to ascertain if any benefits in role item clarification would be gained by inserting a further cycle of the validation-revision process between the current Stage III and Stage IV. Attention should be focussed on those role items which were created anew or were derived through heavy revision of the original role items since it would appear that these would be the ones which might benefit from such an extra stage in the procedure.

5. An independent evaluation of the objectives and rationale of CRIB Project should be carried out. The recommendations of this study are predicated upon the rationale of CRIB Project forming the standard against which the current level of implementation of the role items was assessed. A few validators in Stage II raised the question of the value of CRIB Project, especially in terms of the feasibility of its full implementation. The evaluation should determine if the rationale and objectives of CRIB Project reflect

- (a) a stance which can be shown to be educationally sound, and
- (b) a stance which is appropriate to the current organization and priorities of EPSB system.

6. An evaluation of the other aspects of CRIB Project which were not covered in this study needs to be made. Areas to be investigated include:

- (i) The effect of CRIB Project on student learning of and attitudes towards science. Such a study, however worthwhile, would be difficult to perform in view of the pervasiveness of CRIB Project banks and the presence of other confounding variables. The study would require the cooperation of another school system where the

banks were not being used.

(ii) The cost-effectiveness of CRIB Project in terms of a comparison with other methods for teaching junior high school science and for increasing the level of professional development of teachers.

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APPENDICES

APPENDIX 1

Idealized Model

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February, 1976.

As you may be aware, we are currently carrying out a study in the Edmonton Public School Board System entitled: "The Development of a Model to Assist in the Further Implementation of the Curriculum Resources Information Bank (CRIB) Project." Before we describe this study and outline the assistance that we hope you will be able to give us, we present a brief history of CRIB Project to acquaint you with the Project or to refresh your memory.

Brief History of CRIB Project

The Curriculum Resources Information Bank Project was begun in 1969 for junior high school science as a cooperative venture of teachers of EPSB and members of the Department of Secondary Education, University of Alberta. Its major purpose is to provide teachers of science with ready access to a great variety of teaching resources or information about them, and as a consequence to bring about continual rational change in the science curriculum. The first bank to be developed was the Grade 9 Physical Science bank. Over a period of years previously, Edmonton science teachers had gained considerable experience with a large number of new courses and many of these teachers were also active in developing their own courses. It was important that the results of these individual efforts be collated, shared and expanded. The vehicle for this sharing is a Keysort card bank

in which curriculum information is collated and organized by science teachers into five sub-banks covering Content Detail (CD), Lesson Plan Teacher Part (LP-T), Lesson Plan Student Part (LP-S), Audio-Visual Aids (AV) and Problems and Test Items (PT). There is also a summarizing Master Card sub-bank (MC). The structure is open-ended to permit addition and revision of information and a code is incorporated to facilitate the storage and retrieval of information.

Originally ten data banks were prepared, field tested for one year, evaluated on the basis of the test and placed back in the schools for further use. Gradually the Project developed to the stage where every school which was teaching Grade 9 Science in EPSB system has had a bank made available to them. Subsequently the biological sciences bank for Grade 7 and the earth science bank for Grade 8 were placed in every junior high school.

Two evaluations of CRIB Project have been carried out, one in 1972 and again in 1974. From these it appears that teachers want continued access to the banks for the planning of their courses. The 1974 report by Phare and Sware showed that three-quarters of the teachers sampled used CRIB Project materials for more than 50% of their programs.

In the light of these successes, it might seem that the Project is proceeding well and that there is no need for a study such as the present one. However, none of the objectives of the Project (See Appendix I) has been achieved to the degree that is desirable or feasible. For example, the objectives lay stress on mass teacher involvement in the improvement of CRIB Project materials. However, this requires the contribution of feedback on the bank materials, which unfortunately teachers are reluctant to

provide. This reluctance must be overcome if the objectives on teacher contributions are to be met.

It certainly appears that this study is not only warranted but necessary. CRIB Project is a prototype of a new way of looking at curriculum materials and at teacher involvement in curriculum development. It should be given every chance to prove itself, and one of those chances must surely be the implementation of the objectives of the Project. This study is designed to assist in the achievement of this aim.

The Study

Our study has four steps and we are at the moment asking for your assistance with Stage II. The total plan of the study is as follows:

Stage I

The Formulation of an Idealized Model of a Fully-Implemented CRIB Project.

The Idealized Model is our description of how CRIB Project would operate if all the Project objectives (See Appendix I) were fully implemented.

Stage II

Validation of the Idealized Model

In this stage, validators drawn from those who have made or could make a contribution to the realization of the full potential of CRIB Project, are asked to react to the Idealized Model and indicate if it accurately reflects their perceptions of how a fully-implemented CRIB Project would look if it were in operation. In no way is this process to be an evaluation of the current state of implementation of CRIB Project; it is an attempt to describe how the Project would be operating in an ideal setting. From

validators like yourself we require not only a global, or overall, reaction to the model but also comments on the specific contributions that should be made by those individuals and services with which you are familiar. It is Stage II that concerns us at the moment.

Stage III

Revision of the Idealized Model

When all the comments from the validators have been received, the Idealized Model will be revised and expanded in the light of these comments.

Stage IV

Assessment of the Differences between Current State of CRIB Project and the Revised Idealized Model of a Fully-Implemented CRIB Project

Of course, the implementation of CRIB Project is already well under way in the schools of EPSB system and has many successes to its credit. However, there will be differences between the current state of the Project and the Revised Model from Stage III. Accordingly, in Stage IV an attempt will be made to identify these differences and make suggestions as to how they might be overcome so that the objectives of the Project can be more fully realized.

How to respond as a validator

The Idealized Model which accompanies this letter is a fairly lengthy document in four parts or Sections. The trend through the Sections is one

of a sharpening of focus. Section 1 is very general and Section 4 is highly specific. We would encourage you to read all four sections but if your time is very short, you may feel that you can omit the first section. It is vital that you read at least Sections 3 and 4. Section 3 is the schematic representation of how the Idealized Model views CRIB Project and Section 4 gives the detailed role descriptions of all those whom the Idealized Model considers as being essential for a fully-implemented CRIB Project. There are some nineteen or so of these roles and obviously you will not be concerned with them all. Please comment on the ones which you know by either present or past experience or from other exposure. Please bear in mind that you are responding to role descriptions which would apply to a fully-implemented CRIB Project. In no sense is this an evaluation of any kind. Validators are not being asked to comment on 'what is' at the present time but on 'what should be'.

How to make your comments

a) Commenting on the role descriptions of Section 4. Directions are given at the beginning of Section 4.

b) Commenting on everything else. We encourage you to comment in writing anywhere in the model as you read through it. While the role descriptions are an important part of the idealized model, the other sections are just as much a part of it. You may write on the printed page, at the end of each Section, or you may care to attach a page of your comments when you return your copy of the model. How you do it doesn't matter too much - just that you do it!

Answers to questions you might want to ask

1. Can I consult with my colleagues? If you are a member of a group and are the only member being sampled, then it might be helpful if you solicit

comments. Otherwise, we would prefer if you completed the validation on your own.

2. How long will it take? That depends on who you are and what your position is. There is no denying that it will take quite a while to read and respond, even minimally, but against that, we feel that it is an interesting document in itself, and of direct concern to you in your professional life.

3. Are my comments confidential? The information you provide will be known to be yours only by the investigators. You are identified by number alone.

4. If I have any other questions, how do I get them answered? Please feel free to ring either Dr Marshall Nay or Mr Alan Ryan. Their phone numbers are given below.

5. If I feel uneasy about how to tackle my task as validator, can I get help from the investigators? Certainly. If a phone call doesn't suffice, we will arrange for an interview with you so that you can respond that way.

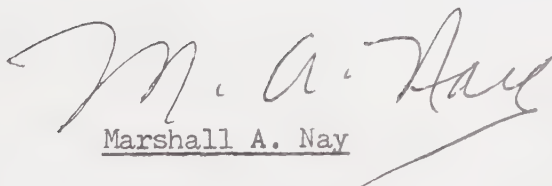
6. When do I have to complete the validation? Very soon, regrettably.

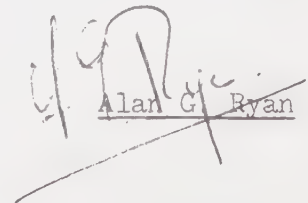
If this work is to be useful in charting the future course of CRIB Project it must be finished by early summer. Hence the model must be validated long before that. Please adhere to the deadline given in the cover letter from Dr Blowers.

A report on the validated model will be sent to you when it is ready.

We are most grateful for your help!

Yours sincerely,


Marshall A. Nay


Alan G. Ryan

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(If I am not in, please leave
name and number and I will
return your call.)

IDEALIZED MODEL OF A FULLY-IMPLEMENTED
CURRICULUM RESOURCES INFORMATION BANK PROJECT

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Mr. A.G. Ryan, Graduate Student, University of Alberta

February, 1976

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IDEALIZED MODEL OF A FULLY-IMPLEMENTED CRIB PROJECT

Overview

The Idealized Model of a Fully-Implemented CRIB Project is divided into four sections. These sections represent a progressively sharper focus on the requirements which must be met if the Project is to be fully implemented according to its objectives.

Section 1 CRIB Project is Located In the first section, the Project is located in the current body of curriculum development theory and implementation theory. CRIB Project is seen as being an inevitable outcome of current developments in these two theoretical fields.

Section 2 CRIB Project is Defined Here the focus is broad as an attempt is made to delineate the sorts of issues which become evident when ways are sought to implement fully the objectives of CRIB Project. The discussions are always about CRIB Project but they are conducted in the light of curriculum thought and practice.

Section 3 CRIB Project is Examined This section shows graphically all the links between different people and services within the EPSB System which should be operative in a fully-implemented CRIB Project. The more significant ones are highlighted.

Section 4 CRIB Project is Dissected Since the Project is, in the last analysis, mainly people, this section consists of role descriptions of all who should be participating in CRIB Project. Their individual attitudes towards and participation in the Project are listed as being those considered necessary in order to operationalize a fully-implemented CRIB Project.

Section 1 CRIB Project is Located

In this section we place CRIB Project in its proper place in current curriculum development theory and implementation theory. Traditionally, these two areas have been concerned with developing and implementing curriculum courses of one sort or another. Their concepts may need to be modified somewhat when a non-packaged comprehensive curriculum resource such as CRIB Project is being considered. We will begin by looking at some aspects of curriculum development theory and we will try to demonstrate that CRIB Project is a product of steady evolution of curriculum development dynamics.

Curriculum Development Theory

The classical model of curriculum development, as espoused by Tyler (1) and others, involves a sequence of: Determining objectives, stating them in their proper form, devising learning experiences, organizing these learning experiences so that specified outcomes can be attained, and, finally, evaluating to see if the outcomes have been attained. There have been criticisms of this model both on the grounds that to follow it is difficult or impractical (See, for example, Eisner (2)) and on the grounds that it does not represent how curriculum developers work in practice (See, for example, Walker (3)). Other writers have modified the model in an attempt to make it a more accurate reflection of the way which their experience shows that curricula are customarily developed. Blaney (4) suggests that program development should be systematic, but not necessarily unilinear as in the classical model. He maintains that in reality program development is multi-dimensional since the stages in it are considered at several interacting levels of decision-making and at different times.

So already we are seeing concerns arising which reflect the experiences that rigid, highly single-minded and unidimensional curricula have not had the hoped-for results in the schools. CRIB Project is multi-dimensional because it conceives that inputs should be from many different sources.

Some theorists have come a long way towards the position that the realistic way to design and implement curricular projects is to take advantage of the diverse interests and expertises of a wide range of educators and subject-matter specialists. Some curricular experts go further than this and encourage interactions between these different sources of input. For example, Aoki (5) advocates what he calls a "mutualistic" model where the goals and means are "interactively related". Thus he maintains that formulation and means-designing go together in complementary fashion, that goals are never entirely clear, that the shortest and quickest way to the goal is not necessarily the best, and that the means may be just as important as the goal. New sorts of questions have to be asked of the program development process under these conditions. No more can it be assumed that goals are set by one group and the means developed by another group. Aoki would have us believe that in the mutualistic paradigm we should somehow arrange for the same group of people to be involved with both ends- and means-development. These views would indicate that the rationale for CRIB Project was in tune with or in advance of current attitudes towards the development of programs. A wide spectrum of views of many different science educators have interacted to produce the project we know as CRIB.

In any project there is some scale of teacher involvement in curriculum development activities which ranges from complete external development with the teacher performing in the classroom as the program dictates, all the way to a program whose goals and means are totally selected and carried out by

teachers. In Alberta the overall objectives of a program of instruction for junior high school science are arrived at from a broader base than merely the teaching body. This seems eminently reasonable. It would also seem reasonable to ensure that teachers have as much input as possible into the development of the materials that they will themselves use in the classroom since: a) Experience shows that they will modify the materials to suit their needs and predilections, b) The implementation of curricular materials requires that they participate in predictable ways (see below), and c) The activities associated with curriculum development by teachers results in the growth of professional skill which is reflected in their classroom performance. CRIB Project was developed mainly by teachers with additional and substantial input from others who were not classroom teachers. Even though not all teachers have subsequently used the materials, the developers and many others have, and so the innovation should be expected to have a better chance of being used in the classroom in the manner which was intended by the developers.

Implementation of Educational Innovations

It might be said that the root cause of the changes in curriculum development dynamics which we outlined in the previous section is the realization of the importance of the human factor in any developmental exercise. Today the theorist is much more willing to consider what the recipient of the developed material will actually do with it rather than what he should theoretically do with it. This realization of the importance of human attitudes is also reflected in modern theories of implementation of educational innovations.

When the design of this study was being established, a decision had to be made whether the study should consider CRIB Project as a program that was at

the moment functioning incompletely or whether, because of the essentially different nature of the parts which had not been implemented to those which had, the study should consider the attainment of the remaining objectives to be an exercise in the implementation of an educational innovation. The latter course was chosen. There is a very rich literature on the implementation of educational innovation, ranging in scope from theoretical frameworks of innovations, case-histories of innovations and even some cautionary tales of how things can go wrong in the implementation of educational innovations. We will consider some of the various modes of implementation which have been developed in recent years, how these modes have become increasingly sensitive to the concerns of teacher resistance and teacher adaptation of innovations, and how the findings of research and the lessons of empirical studies can be brought to bear on the task of attaining a fully-implemented CRIB Project.

Havelock (6) identifies the main models of educational change. He names the categories into which the models fall as: Research, Development & Diffusion (RD&D), Social Interaction, and Problem Solving. He adds a fourth category of his own which uses elements of the first three and which he calls the Linkage model.

Most educational innovation to date has proceeded by means of the RD&D approach even though the model has certain inherent disadvantages. By its very nature it assumes that innovations are developed centrally by experts and, once tested, are disseminated universally to the schools. As a consequence the user has a relatively passive role in the process, either accepting or rejecting the packaged innovations. What happens is well-known: teachers tend to accept those parts of innovations which suit their current philosophy and methods

of teaching but rarely do they adopt an RD&D innovation wholesale. Usually, too, the decision to adopt is made by an authority figure (School Board, Superintendant, Principal, etc.) As House (7) puts it: "Often the only choice left to a classroom teacher concerning an innovation is to either accept it or reject it and he usually exercises this option by rejecting, in whole or in part, the innovation."

On the surface it would appear that since CRIB Project was essentially a grass-roots development, it therefore avoids the problem of coercion arising from decisions made by authority figures. This may well be so. However, such a stance assumes that all teachers are on the same authority level and have the same interest in curriculum development. This may not be the case. It is quite possible for one teacher to feel that a decision made by other teachers is an authority decision and hence to be treated like most authority decisions (i.e. be partially or wholly ignored or thwarted). For example, the mere fact that some teachers were members of a group (the group of CRIB Project) and other teachers were not may be enough to make these latter teachers feel inferior and hence feel that the implementation of CRIB Project represents an authority decision. This aspect needs to be examined.

The Social Interaction model and the Problem Solving approach are by themselves not completely appropriate for educational innovations but their essences are captured in the Havelock Linkage Model (6). This model makes great efforts to smooth the way for the introduction of an innovation by striking up relationships, diagnosing problem areas, choosing the best solution, and other devices. But this system, like the RD&D model, lays itself open to the charge that the user of the innovation is catered to only as someone who must be convinced that the particular innovation is good, necessary, and so on, but there is no requirement that the user be made an

integral part of the change plan. Havelock makes use of the word 'client' to describe the customer who is purchasing the innovation, but in reality the true customer of the innovation is usually someone further down the totem pole.

Curriculum development dynamics have pointed to teacher involvement as the touchstone of successful development. Now we see that implementation theory is pointing the same way since it accepts that without the involvement of the ultimate user the intent of the innovation is likely to be ignored or subverted in some way. The time has come to consider the role of the teacher in greater detail.

The Role of the Teacher in the Successful Implementation of an Educational Innovation

In this subsection we consider the matter of how best to ensure that not only is an innovation adopted by the people who are expected to adopt it, but also that the ways in which they adapt it for their own use (for adapt it they surely will) are at least not destructive to the intent of the innovation and hopefully will increase its utility. When we have done this, we will be in a position to assess if CRIB Project has progressed in accord with the views of the theorists of educational innovations.

Let us first consider the forces which affect the adoption of innovations by teachers. Here we are using the word 'adoption' in the sense of 'placing the innovation in the school'. In other words, we are not asking whether or not the innovation is being used as its designers intended it to be used, but rather we are asking if a head-count would register the fact that a particular school has an innovation within its walls. Obviously this is a first step in the implementation of innovations; without it there is no hope of the second stage - the 'acceptance' of an

innovation by those for whom it is intended and the use of it in a manner consonant with the aims of the developers.

The first step is usually a decision which is taken somewhere remote from the teacher who will ultimately be the recipient of the innovation. The decision maker can be, for example, a principal, superintendant, or a board of trustees. Wherever the decision is taken, it is imperative that those lower levels, down to the ultimate users accept the innovation or else it will die somewhere along the hierarchy. O'Toole (8), himself a principal, says: "Since the principal, in general, has a greater influence upon building climate than any one staff member and may be less open to change than individual teachers, it would seem imperative that he be convinced of the value of the innovation. He should be included in any type of innovative effort." This is a valid point, and surely every link in the innovation chain could make a similar statement about their own importance as gatekeepers. CRIB Project, while having considerable grass-roots characteristics, had to be given legitimacy (not to mention financial support) by decisions made at a high level. After the decision to implement had been taken, the innovation started on its way down the hierarchy. In this instance, the journey took it to many figures who had been instrumental in the development of the concept and so CRIB Project was facilitated. But there were inevitably contacts with personnel who were unversed in the aims of CRIB Project and these people had to be won over to the concept. How successfully this proselytizing was performed must be considered in any assessment of the Project. Further, there is now another innovation - 'the full implementation of CRIB Project' - and so the process of ensuring support for this innovation must take place again.

Let us assume that the innovation has been adopted by the individual schools. We must now discuss the acceptance of the innovation by the individual teacher. Will he use the innovation at all? Will he use some or all of it

but after twisting or even subverting the aims of the innovation? (Perhaps, for example, he will use the methodology of a discovery experiment to further the learning of some content matter.)

Studies have shown that teachers are not opposed to innovations per se. In fact, teachers often innovate on their own initiative, albeit usually on a small scale. Where do teachers find the ideas which either they try out in their own classrooms or which spur them to make an attempt at developing a new program? Hotvedt (9) is quoted by House (7) as finding that fully 54% of a teacher's personal sources of information were among their closest friends and closest work associates at school. Wolf (10) found a figure of 74% among a different sample of teachers. Haller (11) investigated elementary schools in Ontario and found that teachers were not averse to innovations being introduced but that the most popular source of new ideas was their colleagues.

Once an innovation has been accepted by a teacher, there is still the possibility that he will use it, perhaps unwittingly, in a way which the designer did not intend. The extent to which an innovation is distorted by the user is gaining increasing attention in the literature of implementations in education. House, Steele and Kerins (12) report that with independent study programs teachers often 'transform' the programs' intents. In one program where grades were not to be given, the teacher covertly introduced a system of 'black marks' that were assigned to students who did not complete their homework on time. Gallagher (13) reports that biology teachers, even those trained in BSCS special centres, varied widely in their use of the same materials. CRIB Project materials were designed to be used by the teacher in any way that he found appropriate, but of course the materials are only a part of the total CRIB Project concept.

The extent of distortion of an innovation by a teacher who integrates it into his existing operating strategy depends on how closely the innovation

fits the recipient's current strategy and how well he has been prepared, by in-service programs or active participation, to accept the innovation. Conversely, the greater the disparity, the greater will be the distortion. House (?) sums up this aspect"

If one compares the original innovation with its implementation, it looks impure. . . because of the perversity of the receiver. But that is because the sender sees just the pure light of his own message. The receiver, the teacher, sees a melange of messages traveling to him over his own personal social networks. He integrates them, as he understands them based on his own reference groups. In those rare cases where innovator and teachers work closely together, the teacher's view may be very close to the inventor's, blocking other messages.

In order to take into account each teacher's unique approach to his task, Connelly (14) advises developers that:

For maximum utility to teachers, the materials ought to include a layman's account of the theoretical basis for the materials and an account of the curricular possibilities latent in them. The function of user development is to construct images of particular instructional settings by matching a variety of theoretical conceptions with the exigencies of these settings and to translate these images into a curriculum-in-classroom use. In this translation teachers choose from among available materials those that best suit their images.

Connelly holds that the effects of the accepting of this functional view of curriculum development on external developers and teachers would be that the adoption of the new product would amount simply to treating curriculum materials as alternatives for teacher choice. This is a view that corresponds closely with that of CRIB Project rationale, where one of the avowed aims is to provide the teacher with a range of alternatives from which he can select the material which suits his individual style, needs and teaching situation. But that is only one of the aims of CRIB Project. How much of the failure to achieve the other aims of CRIB Project can be attributed to the fact that all the users of the banks were not involved in their creation?

Development, Adoption and Acceptance of Science Curricula

Here we are concerned with the application of the ideas expressed in the subsection on implementation to the development and adoption of science curricula. As has been shown, there is some ambiguity over the meaning of 'adoption'; here it means the installation in a school of the methodology of an innovation. The acceptance of the innovation occurs when the classroom teacher uses it in the exact manner which the program developers have laid down.

The 1960's saw an explosion of new science curricula produced in the United States, Britain and elsewhere. These programs were generally developed by agencies other than schools and with varying degrees of teacher participation. The vast majority of the programs were of the RD&D type with more or less attention being paid to the advance or in-service preparation of the teachers who were to use the curriculum package.

The extent to which a curriculum has been adopted may serve as one measure of its success. For example, Becher (15) found that in Britain: "O-Level Science Programs (from the Nuffield Project) were. . . being used in one form or other in at least 45% of the schools with O-Level streams." Mayer (16) reports that BSCS Biology courses have been adopted with local adaptations by nearly 50 countries all over the world. In addition to these there are available other more qualitative findings, such as: "Enrollment in physics departments of high schools has continued to drop even after the introduction of PSSC Physics (Bridgham and Welch (17)), and: "The Yellow Version was the most widely used in comparison to the other BSCS Versions" (Blight and Bila (18)). In this sense of the term 'adoption' CRIB Project has a perfect record since it has been installed in all the junior high schools in the system. However, this sheds no light on how the teachers have accepted not only CRIB materials but the CRIB Project

philosophy of teacher-contributions to the banks.

Still to be discussed is the extent of acceptance of the new curriculum materials by the teachers in the way that the developers intended. There are remarkably few evaluations of the extent to which science teachers change their instructional strategies when they adopt a new curriculum. Gallagher (13) has found that for one of the BSCS Biology programs, each teacher presented his own interpretation of it and that these different approaches resulted in different ideas and concepts being presented to the students. On the other hand, a recent study by Orgren and Doran (19) revealed that even when adoption of a science curriculum (in this case the Revised New York State Regents Earth Science Syllabus) is mandated, there was a "more frequent employment of the teaching behaviors advocated by that curriculum."

What are the lessons to be learned from this survey of the literature on Curriculum Development Theory and Implementation Theory? We note some of them and comment on how we estimate the extent to which CRIB Project has taken note of them.

1. The participation of teachers in a curriculum development program increases the chances of the program reflecting the views and interests of those for whom the program is intended. (CRIB Project has involved teachers from the beginning. Were sufficient numbers of teachers involved?)
2. Teachers will pick and choose from new programs those parts of them which suit their teaching styles. (By offering wide alternatives in the banks, CRIB Project would appear to be meeting this aspect.)
3. A change of attitude in a classroom teacher so that he uses new ideas and materials may best be achieved by a) providing in-service training in the new program, b) ensuring that the new program is closely related to his current needs, and c) involving him in the development process. (Perhaps teachers are not sufficiently aware of the philosophy and special needs of

CRIB Project. Are teachers aware of the rationale of CRIB Project and the requirements of critical feedback and writing-team participation?)

4. The gatekeepers and facilitators in an implementation hierarchy must be identified and attempts must be made to convince them of their role in the implementation strategy. (Has CRIB Project done enough in this direction?)

COMMENTS:

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Section 2 CRIB Project is Defined

CRIB Project is in many ways unusual and in some even unique. An examination of the objectives of the Project (Appendix I) shows that it was conceived as an open-ended enterprise. This is in contrast to most of the science curriculum projects of the time which were designed to deliver a packaged program of materials and associated methods to the classrooms of schools all across the continent and even the world. CRIB Project is possibly the largest project of its kind in the country and perhaps even further afield.

The Scope of Teacher Involvement in CRIB Project

The objectives also reveal that CRIB Project has several quite different although conceptually related objectives for teachers to be involved in the Project. These objectives for teacher participation can be grouped into three main categories:

- A. By making use of the materials in the banks, the teacher will be able to upgrade the content of his presentation, widen the scope of his planning and evaluate the classroom results more effectively. Peripheral advantages include such considerations as the potential for less time being spent in lesson preparation.
- B. By reacting to the materials in the bank, the teacher will be prompted to contribute his own ideas, criticisms and improvements on the items in the banks as well as teaching materials which he himself developed to a central pool which will result in the contents of the banks continually being improved.
- C. By participating in group writing sessions for the production of CRIB Project materials, the teacher will be a) developing curricular materials

of a high calibre, b) be increasing his professional and subject-area competencies by the concentrated study and interpersonal exchanges which are essential to and inevitable in such writing sessions.

These aims are definitely intended to be hierarchial. The third one is seen as being the highest form of professional development which derives from participation in the activities of CRIB Project. We will examine these three aims both in the light of their appropriateness and also in the context of achieving them. During the course of this analysis other important considerations, such as the mechanics of the delivery system of the information in the banks, will be discussed where appropriate.

A. THE BANKS AS A SERVICE TO TEACHERS

The curriculum guidelines laid down for the junior high school science programs by the Department of Education are very flexible. Within certain overall limitations, the teacher is free to develop a program which he feels will be appropriate to the needs and capabilities of his students and which can, to a degree, reflect his own biases, preferences, teaching style and inter-staff relationships. To assist in this sort of program development the banks of CRIB Project are a rich resource. The teacher is free to select materials from the banks and if he uses the banks well, the program he develops should be well-tailored to his individual needs and situation. How does this approach compare to the using of an authorized text or specific program? This depends to a large extent on the type of book or course selected, and how well that book or course fits the preconceptions and attitudes of the teachers for whom it is prescribed. Let us examine this idea.

Traditionally, it has been assumed that the best way to develop a new curriculum is to arrange to have the requisite tasks carried out by

those who are the best qualified to do so. It usually transpires that those who are considered "best qualified to do so" are curricular or subject-area specialists who are not classroom teachers. During the recent curriculum reform movement the concept of a "teacher-proof" curriculum originated as a result of the concern on the part of curriculum developers that even the best-designed curricular objectives and procedures are modified by the teacher in the classroom. It seems unrealistic to expect that the teacher, cognizant as he is of his own strengths and weaknesses and of the characteristics of his pupils, to perform in a manner with which he feels unfamiliar or uncomfortable, or to accept a program to which he is not committed. In the light of this sort of experience, there has been a move to increase the scale of teacher involvement in the curriculum writing and implementation processes. It would seem then that the rationale for CRIB Project was in tune with or in advance of current attitudes towards the development of programs. In any given project there is some scale of teacher involvement in the curriculum development activities which ranges from complete external development with the teacher performing as the program dictates (as was the case in the early versions of Science - A Process Approach), all the way to a program whose goals and means are totally selected and carried out by teachers. Nowadays, the typical project occupies some middle ground between these two extremes. In Alberta the overall objectives of a program of instruction are arrived at from a broader base than merely the teaching body. It is important to ensure that teachers have as much input as possible into the development of the materials that they will themselves use in the classroom since experience and research studies show that they will modify the materials to suit their needs anyway, and also the very implementation of the curricular materials requires their participation.

However, CRIB Project is not another new science curriculum. It is a

compilation of information on all available teaching resources for teaching a given discipline and it includes the materials in the recently developed courses. Its philosophy actively encourages teachers to modify the materials. Indeed, one of the concerns often expressed by those close to the Project is that teachers will do the initial work of finding a program that suits their needs and for year after year will simply reproduce that program without considering the alternatives in the banks. It is felt that one way to avoid this stagnation is to have the teachers use the banks but the banks would be changed every year or so in such a way that it would be to the advantage of the teacher to check and see just what has been changed in the contents of the banks.

A number of problems need to be dealt with in making continually revised banks available to teachers and in extending the use of the banks to an ever-increasing number of teachers. Some of these are:

- How can non-users become users of the banks?
- How can users be assisted to use the banks more effectively?
- What can school administrators do to increase the level of involvement of teachers in CRIB Project?
- Who should have the responsibility for updating, improving and expanding the banks and how can this responsibility be discharged?
- How can teachers be persuaded to contribute modifications to the banks in the light of their experiences with the bank materials?
- Can the materials be made more suitable for individualized instruction?

Systems for Information Storage, Retrieval and Dissemination

An essential part of the banks in their role as servants of the teachers is the delivery systems which are employed. At present all the material is written on Keysort cards which allow for the rapid retrieval of the

required information once the techniques of operating the system have been mastered. However, the many thousands of cards which constitute the banks do occupy a large volume and this can lead to the banks being shunted out of the way and out of use. There is also the problem of intentional or careless losses of bank items which, of course, lowers the utility of the banks. The ultimate system would be a computer-based one where there would be a terminal in each school for retrieval of information and for provision of critical feedback by teachers. Among the less advanced systems that have been proposed as being intermediate between the present Keysort cards and the computer facility is microfiche which can be scanned in a special, though not unduly expensive reader. Prints can be made from the microfiche although they tend to be expensive relative to other methods of duplication primarily because of the cost of the equipment. Advantages to this system include its rapid search potential because the information is organized better, and the enormous reduction in required storage space. Disadvantages include the eye-strain of microfiche reading, the expense (and hence probably the unavailability) of reproduction for classroom use, and the immobility of the system because of the need to use the reader and hard copier.

The computer facility would answer all of these problems. Although the initial cost of such a facility would be high, especially if it were to be used only by CRIB Project, the cost of a computer-based system for science banks would be substantially reduced if these terminals were used for administration and counselling services as well as by teachers using banks in other subject areas. Therefore, provision for the computerization of the banks should be considered in any plans for the increased applications of computer technology in the EPSE system in the future. Questions that may be asked include:

- Can the potential of the Keysort system be extended?
- Is it practicable to incorporate the material on to microfiche as an

(20.)

intermediate answer?

- What are the costs of the incorporation of the CRIB Project materials into a system-wide computer which is also designed for other users such as administration and counselling?
- What specific computer hardware and personnel would be needed to provide every junior high school science teacher with access to the the curriculum resources information banks through a computer remote terminal?

B. THE BANKS AS A SPUR TO TEACHER-SHARING OF REACTIONS AND IDEAS

This aspect of CRIB Project has not proved to be a success. Very little feedback along these lines has been obtained by the project director and only then with a great deal of arm-twisting on his part. The reasons for this attitude need to be examined because this is a central aspect of teacher involvement in the Project.

The project rationale emphasises the need for feedback. Indeed, the originators consider it to be the lifeblood of CRIB Project. It was by feedback that the contents were going to be updated, corrected and expanded, that duplications were to be eliminated and oversights rectified. There was also an impression that by contributing to the banks, the teacher would be improving himself professionally. He would be forcing himself to think in his subject area and of his role as a teacher. He would also be helping his colleagues who would be the ultimate recipients of his feedback. Questions which need to be asked include:

- Do teachers begrudge the time involved in preparing and submitting their contributions?

- Are CRIB items perfect as they now stand, rendering modification redundant?
- Do teachers feel that any material that they would produce would be inferior in quality to the bank item it was designed to replace or augment?
- Should teachers using the banks as a resource be obligated to comment critically on the materials that they use?
- Should there be more, or different, in-service training programs for any new users of the banks?
- Do teachers recognise the importance to CRIB Project of the making of contributions?
- How significant a role do principals and other school administrators play in the contribution of items from their staff?
- What support does Central Office provide to this aspect of CRIB Project?
- How emphatic are the Curricular Associates in stressing this aspect of CRIB Project?
- Are Curricular Associates themselves aware of the need for feedback?
- What mechanisms are needed to facilitate feedback from teachers?

C. THE BANKS AS AGENTS OF PROFESSIONAL GROWTH THROUGH WRITING SESSIONS

All three levels of involvement lead to professional growth. Level A increases the teachers' repertoire. Level B makes him or her a more critical decision-maker and sharpens the creative skills. However, only in this level, Level C are his ideas subject to critical scrutiny and his creativity given the reinforcement resulting from interaction with his peers.

This aspect of CRIB Project operation is considered to be the highest form of professional development that the Project offers the classroom teacher.

There is much curricular innovation carried out in many individual classrooms but the fruits of these small programs hardly ever reach a wider audience. There is often, on the other hand, teacher participation in large curriculum studies but the contribution of the individual teacher is often lost in the larger picture. The CRIB Project writing sessions offer the teacher the chance to participate, usually in groups of two or three, in the designing and writing of materials for the banks. The originators of CRIB Project felt that this was the highest form of professional involvement for the teacher because he was contributing to a large project but his individual contribution stood on its own; because the interplay of kindred minds forced the participant to stretch himself mentally in his subject area; and because by first-hand experience the teacher became acquainted with the difficulties and the possibilities of curriculum development work.

Once again many questions present themselves:

- What administrative arrangements need to be made to bring an increasing number of teachers in to the writing sessions?
- How could curriculum specialists assist in the integration of the materials in the banks?
- What advantages would there be in bringing subject matter specialists in to the writing sessions?
- How can reading specialists be best used to examine the reading level of the materials in the banks?
- What contributions can testing and measurement personnel make to the materials in the problem and test-item bank?
- What routes are open for IMC personnel to provide information on the A-V material that is to be incorporated into the banks?
- Should steps be taken to include teachers from other school systems so that a cross-pollination of ideas can take place?

Many questions have been posed in this section and many more can be asked. To be in a position to answer them, we need to understand the links between groups in the Project and the forces that are operating. These considerations are examined in the next section - Section 3 CRIB Project is Examined.

COMMENTS:

Section 3 CRIB Project is Examined

In this section a schematic presentation is made of the involvement of Edmonton Public School Board personnel and support services in the Idealized Model of a Fully-Implemented CRIB Project. For the scheme, see Figure I.

It will be noted that in this scheme the participants are grouped into one of several categories (some participants fit into more than one category) and the linkages and relationships are identified by arrows. These linkages are those which the model predicates as being operational in a fully-implemented CRIB Project. The linkages and relationships are described only in broad terms in this section; the specific role description of each participant is given in Section 4. It will also be noted that the encompassing circle describes an interface between those who must be involved in a fully implemented CRIB Project (all of these are within the EPSB System) and those who could become involved in due course (most of these are outside the EPSB System).

Definition of Participating Groups

USERS OF THE BANKS. In this category are those people who actually avail themselves of the materials in the banks. These are primarily the science teachers who use the materials to plan at least some part of their courses. Other users might be librarians looking for titles of books to order, staff in research and evaluation using test items for the development of tests for evaluating the effectiveness of science teaching, and so forth.

PROJECT DIRECTOR AND STAFF. The director at present is a classroom teacher with time off to attend to the demands of the Project. He has no permanent staff but obtains his assistance as the need arises; he must in effect negotiate for it. Nominally his staff includes the junior high school science curricular associates, classroom teachers who join writing

groups, and the requested secretarial assistance. Several questions must be answered in regard to this staffing arrangement:

- What full-time staff is needed for a fully-implemented CRIB Project and what are the duties of each member of this staff?
- How can the process of negotiation for occasional supplementary assistance be streamlined?

DEVELOPERS AND MAINTAINERS OF THE BANKS. These are primarily the people who contribute ideas and materials to the banks, either individually or through participation in writing sessions. Furthermore, these ideas and materials must be collated, assessed and written in a form suitable for inclusion in the banks. The members of this group include the project director and his staff, the junior high school curricular associates, and those classroom teachers who are users of the banks and who contribute materials to the banks. In addition the following have a role in the development and maintenance of the bank information:

1. Supervisor of Science and Health,
2. Librarians in the central office and schools who are constantly in search for new materials which should be included in the banks,
3. Personnel in the Instructional Materials Centre in the Central Office and in the schools who search for audio-visual aids (including video materials) relevant to the science banks and provide synopses of these to the writing groups, who develop specific materials requested by the writing groups, and who carry out any required illustrations and other graphic work,
4. Personnel in pupil assessment who assist in the development of the problem and test item sub-bank,
5. Consultants. a) Personnel in all of the above-mentioned support services would provide consultative assistance as required,

b) Additional consultative help would be provided by subject consultants (especially those in reading, language arts and mathematics),

c) As progress is made towards more interdisciplinary curriculum development, cooperation would grow between consultants in other subject areas, especially those in social studies, physical education and fine arts,

d) Consultative assistance would be required from EPSB System and University specialists in curriculum development and evaluation,

e) Consultative assistance would be required from practising scientists to check the accuracy of the science information in the banks and to provide new ideas for material to be included in the banks.

FACILITATORS. Included in this group are the people who make the primary decisions in the school system and so whose participation is essential to the very existence of CRIB Project and its efficient development and functioning. However, their direct involvement in the development and maintenance of the banks is minimal or nil. The key facilitators are the Associate Superintendent of Curriculum, his two Assistant Superintendents in curriculum services and research and evaluation, the Directors in these two services, the Supervisor of Science and Health, and the supervisors and consultants most concerned with curriculum development, supervision and evaluation in junior high school science. The other major group of facilitators comprises the administrative staff (principal, vice principals and science department head) in the junior high schools who can be instrumental in assisting science teachers to become involved or increase their involvement in CRIB Project in the ways described in Section 2. One further group of facilitators whose importance to the Project is great comprises the personnel in educational data processing. They are required

to help develop a suitable system of computerizing the information in the banks and to make this information available to teachers in the schools.

NON-USERS These are primarily teachers of junior high school science in the Edmonton Public School System who have or could have access to the banks but who have chosen, for one reason or another, not to use the banks.

Linkages and Relationships For a fully-implemented CRIB Project, all of the linkages within the CRIB Project interface must be well established, strong, and operating smoothly. There is not the same necessary condition for those linkages which extend across the Project interface. In these latter instances the linkages may be weak or strong, one-way out, one-way in or two-way. Which of these conditions obtains will depend on the relative interests of the parties concerned and the drain on the energy and resources of the Edmonton Public School Board System that can be sustained.

In this discussion of the linkages and relationships involved in a fully-implemented CRIB Project the major focus will be placed on those within the interface. For the sake of greater clarity, these linkages have been numbered (See Figure I) and when mentioned in the discussion, they will be identified by these numbers.

The central relationship of the model, and indeed the raison d'etre of CRIB Project is between those who use the curriculum banks and the banks themselves. The linkage operates in both directions (1,2). As has already been indicated the major users are the science teachers who need the banks in order to operate more productively and efficiently in the classroom. Linkage 1 in fact corresponds to level A of teacher involvement discussed in Section 2 above, namely that of use of the bank information for the preparation of lessons.

Linkage 2 corresponds to level B of teacher involvement discussed in

Section 2. Feedback from the users is needed in order to up-date, improve and expand the banks so that an increasingly better service can be provided to users.

Linkage 20 relates to the role of teachers in motivating others by example and other means to become users of the banks. Evidence exists that motivation by example is perhaps one of the most effective ways of implementing innovative ideas. Other types of persuasion can be brought to bear on non-users by CRIB Project Director (19) and at a more general policy level by central office facilitators (21) and school administrations (21).

The second most important relationship is between the banks and those responsible for developing and maintaining them (3,4). The main component of linkage 3 is level C of teacher involvement discussed in Section 2, viz. the writing of CRIB materials in group sessions by participating teachers. Input to the banks also comes from the Project Director and his staff (5), curricular associates, librarians, personnel in instructional materials centres and pupil assessment, and a battery of consultants.

Linkage 4 consists basically of two components. One is the feedback that is represented by linkages 2,5 and 8. Such feedback is usually in a fairly "raw" form and which must be collated, evaluated and written in the proper form by the developers of the banks. The second component consists of the on-going assessment of the completeness and adequacy of bank materials which the developers must make and which must be acted upon. These two components are the operational aspect of the principle inherent in CRIB Project rationale that the information in the banks must be continually scrutinized, field-tested and revised.

The Project Director and his staff (as defined above) are in effect the catalysts of CRIB Project. They discharge a wide range of responsibilities:

- Submission of proposals for funding for the project (12),
 - Initiation, organization and promotion of the work of the developers and maintainers of the banks (5),
 - Use of the banks (7) in in-service professional development work with teachers, especially in regard to promotion of the most effective use of the banks (9),
 - Direct input of materials into the banks (8), especially from new textbooks, tests, etc., which come to their attention through professional reading, attendance at conferences, and other sources.
 - Solicitation and receipt of feedback from users of the banks (10) which, depending on the quality, may be put directly into the banks (8) or passed on to the developers and maintainers (5),
 - Deal with queries, requests, directives, etc., from the facilitators (11). Examples would be requests from principals for in-service meetings, provision of hospitality for important visitors to the system, and so on,
 - Motivation of non-users of the banks to become users (19),
 - Provide CRIB Project materials to and serve as consultants and resource personnel for CRIB-type projects in other subject areas and grade levels within the EPSB system (22) and in other systems (24); and receive in return materials and information from these two sources (23, 25)
- Linkages 22,23,24,and 25 obviously would be strengthened by computer facilities which would link the banks.

Because of their positions of influence, the Facilitators are linked to all the other elements in the model. Linkages 11 and 12 represent the interactions between the Director and the facilitators which have already been discussed from the viewpoint of the Director. By the provision of financial support, time-off for writing, and other less concrete but necessary modes of support, such as encouragement and engendering a feeling of the worth

of being involved in a significant curriculum exercise such as CRIB Project, the facilitators strengthen the roles of the users (17) and the developers and maintainers (13). In return, the facilitators receive rewards which may be intangible but nonetheless satisfying for that. The knowledge that the teachers in their responsibility are performing more efficiently and productively is a reward (18). So is the knowledge that under their aegis the banks are improving and are being made more responsive to the needs of the users (14, 15). The personnel in educational data processing receive from CRIB Project a strong reason for the creation of a sophisticated computer facility which augments the justifications from administration and counselling services (15). The banks themselves will of course benefit from this computerization of the information storage and retrieval (16). As time goes on, the possibilities arise that CRIB Project of EPSB System may become the forerunner of a provincial or national system of banks, all interconnected. Such a network would place organizational demands on the facilitators (26) but the gains to the system and its users would be channelled through the facilitators (27).

Conclusion In Section 3 an attempt has been made to portray the linkages and relationships which would exist in a fully-implemented CRIB Project. Examples of the nature of the linkages have been given. In the light of this analysis, we are now in a position to draw up role descriptions for all the groups who have been mentioned in the preceding Section. Section 4 comprises these role descriptions.

COMMENTS:

Section 4 CRIB Project is Dissected

In this section we give itemized descriptions of the roles which must be played by those individuals and services whose participation is necessary for the implementation and subsequent smooth running of a fully-implemented CRIB Project. As far as has been possible, these roles have been drawn from the material in Sections 1,2,and 3 so that they represent an inevitable outcome of the analysis which has been carried out up to this point.

We ask you to tick the appropriate column after you consider each item in a role. There are five categories:

AGREE ABSOLUTELY	Self-explanatory.
AGREE BUT. . .	Please give your reason in the space following the role item.
UNDECIDED BECAUSE. . .	Please give your reason in the space following the role item.
DISAGREE BECAUSE. . .	Please give your reason in the space following the role item.
LACK REQUIRED BACKGROUND	Obviously, no one validator will be able to respond to all the roles. If you feel that you know nothing about a particular role item, please tick this column. However, do not feel that you have to have direct experience of a role to be able to comment on it. You may well be near enough such a role to be able to make very useful suggestions.

We have also included space for you to write in additional role items that may occur to you as you read the model.

As with the other sections, we welcome any other comments you may care to make. Some aspects of the roles on which you may care to comment could include: their appropriateness, their feasibility, how realistic are they, how desirable are they, and problems in their implementation. Please remember that these role descriptions are for a fully-implemented CRIB Project and are not intended to be those which may or may not be operating now.

Agree Absolutely	Agree BUT. . .	Undecided BECAUSE.	Disagree BECAUSE.	Lack required background

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4.5 Ensure that the necessary policy is devised and implemented so that CRIB Project moves to reflect the changing objectives.

Agree Absolutely
Agree BUT. . .
Undecided BECAUSE. . .
Disagree BECAUSE. . .
Lack required background

4.6 Cooperate with the Director of Curriculum Supervision and the Director of Professional Development to coordinate on-going efforts to increase the value of CRIB Project.

4.7 Exercise his responsibilities to ensure the appointment of high-calibre Project personnel.

4.8 Incorporate CRIB Project into the master plan of total curriculum development of all subject areas at all grade levels.

Additional role items:

Agree Absolutely	Agree BUT...	Undecided	Disagree BECAUSE..	Lack required background

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1. The first part of the document is a title page. It contains the title of the document, the author's name, and the date of publication. The title is "The History of the County of York, from the Earliest Period to the Present Time." The author is "John Smith, Esq." and the date is "1790."

2. The second part of the document is a preface. It contains a short history of the county, and a list of the names of the persons who have been lords of the county, from the time of the Conquest to the present time.

3. The third part of the document is a list of the names of the persons who have been lords of the county, from the time of the Conquest to the present time.

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1. The first step in the process of identifying a problem is to recognize that a problem exists. This involves gathering information about the situation and identifying the specific issue that needs to be addressed.

2. Once a problem has been identified, the next step is to define the problem clearly. This involves stating the problem in a concise and specific manner, identifying the scope of the problem, and determining the goals that need to be achieved.

3. The third step in the process is to generate potential solutions. This involves brainstorming ideas and considering different approaches to solving the problem. It is important to consider a wide range of options and to evaluate the potential benefits and drawbacks of each solution.

4. The fourth step is to select a solution. This involves evaluating the potential solutions and choosing the one that is most likely to be effective. This decision should be based on a careful analysis of the pros and cons of each option.

5. The final step in the process is to implement the solution. This involves putting the chosen solution into action and monitoring its progress. It is important to stay flexible and to be prepared to make adjustments if the solution is not working as expected.

Additional role items:

Additional role items:

252.

Agree Absolutely
Agree BUT. . . .
Undecided BECAUSE.
Disagree BECAUSE.
Lack required background

Information Systems will occupy a pivotal position in the transfer of CRIB Project materials banks from Keysort cards or microfiche to computer management.

10.1 Information Systems should understand the necessity of ultimately transferring the materials in and the management of the banks to a computer facility.

10.2 Since computer use in the school system is likely to be initially mostly by administrative and counselling services and only subsequently by such curricular projects as CRIB Project, there should be an awareness of the future curricular needs of the schools when a computer network with remote terminal capabilities is being designed.

10.3 Any computer system which is recommended to EPSB by the Directorate should have the requisite flexibility and capacity for non-administration (e.g. curricular) projects.

10.4 The Directorate should prepare the specifications of a computer system which would be sufficiently flexible to handle CRIB Project management over and above the projected needs of administrative and counselling services.

252.

Agree Absolutely	Disagree BECAUSE.
Agree BUT . . .	Lack required background
Undecided	

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253.

Agree Absolutely	
Agree BUT...	
Undecided BECAUSE.	
Disagree BECAUSE.	
Lack required background	

10.5 The Directorate should prepare an estimate of the initial cost of transferring CRIB Project materials and management to a computer system.

10.6 The Directorate should assist in the development of the C.A.I. potential of the CRIB Project materials.

10.7 Once the banks are computerized, information should be transmitted to the Project Director concerning unused or underused items in the banks.

10.8 The Directorate should work with the Director of Educational Data Processing and the Director of Pupil Assessment to ensure that the evaluative functions can be incorporated into the computer management network.

Additional role items:

Agree Absolutely
Agree BUT...
Undecided BECAUSE.
Disagree BECAUSE.
Lack required background

Although the Director and his staff will not be intimately or directly involved with CRIB Project, they will be required to assess the ultimate success of CRIB Project as measured by the improvement of pupil learning and of attitude towards science at the junior high school level. The holder of this position should:

11.1 Monitor the progress of students in junior high schools so that an assessment can be made of their progress in knowledge acquisition and understanding of science.

11.2 Design a study to enable the contribution of CRIB
Project to this student progress to be assessed.

11.3 Design a study to enable the contribution of CRIB Project to the students' attitudes towards science to be assessed.

11.4 Relay the results of these two studies to the Director of CRIB Project and to those departments which can incorporate the results into their participation in CRIB Project.

12. Supervisor of Science and Health

The holder of this position should:

12.1 Function as a mediator between other facilitators and the staff of CRIB Project.

12.2 Provide ideas and new directions for the Director of CRIB Project to follow.

12.3 Undertake the integration of CRIB Project with other science programs operating in the System.

12.4 Bring to the Project staff his knowledge of the new science materials that are being produced elsewhere.

12.5 Provide the key contact with other systems for the initiation of consortium-type projects or other ways of extending CRIB Project.

256.

Agree Absolutely	
Agree BUT...	
Undecided	
Disagree BECAUSE.	
Lack required background	

12.6 Take the requisite steps to ensure that the materials in the banks are continually revised and expanded.

Additional role items:

Agree Absolutely
Agree BUT. . .
Undecided BECAUSE. . .
Disagree BECAUSE. . .
Lack required background

14. Personnel in the EPSB Library System

The library services should:

14.1 Be aware of all the materials in their catalogues which are mentioned or used in the materials of CRIB Project banks.

14.2 Be aware of the kinds of library materials which are especially pertinent to the needs of CRIB Project.

14.3 Inform the Project Director of additions of such materials to the catalogues of the services.

14.4 Inform the Project Director of information on new releases of suitable materials that could be obtained for the libraries and for CRIB Project. Such materials would include text-books, written materials from new curriculum projects, materials from industrial sources such as Syncrude, journals devoted to the teaching of science, and so on.

Agree Absolutely
Agree BUT. . .
Undecided BECAUSE.
Disagree BECAUSE.
Lack required background

14.5 Inform the Project Director if any materials which are used or referenced in the bank items become unavailable or superseded by later editions.

14.6 Work with the Directorate of Information Systems and the Director of Educational Data Processing to ensure that the libraries will be able to mesh their cataloguing and management of their materials with the computer-managed operations of CRIB Project.

14.7 Be familiar with the references to library materials which are mentioned in the materials in the banks, and ensure that they are available in school and central libraries.

Additional role items:

Additional role items:

16. The Principals of the Schools

Principals can be expected to have differing levels of interest in CRIB Project depending on their own subject and curricular predilections. As a minimum response to CRIB Project, principals should:

- 16.1 Be aware of the existence of CRIB Project.
- 16.2 Be sufficiently familiar with the rationale of the Project to understand how it resembles and differs from other curricular innovations.
- 16.3 Understand that use of CRIB Project materials by a teacher leads to a more efficient and productive use of the teacher's time.
- 16.4 Understand that the rationale of the Project encourages teachers to participate in group writing sessions to enrich the professional abilities and attitudes of these teachers.

Agree Absolutely	
Agree BUT . . .	
Undecided BECAUSE . . .	
Disagree BECAUSE . . .	
Lack required background	

21. The Teachers

Because teachers are the people most concerned with CRIB Project and who have the most to do with it, they are expected to maintain a high degree of involvement. They should:

21.1 Make use of the banks to improve their efficiency and professional competence. Specifically, they should:

21.11 Draw upon bank materials for planning their courses, acquiring necessary background information, and preparing class materials and test items.

21.12 Be prepared to use selected items from the banks as enrichment material for individual students who have that need.

21.2 React to the banks. Specifically, they should:

21.21 Keep a cumulative record of which bank materials they have used. (Upon the introduction of computer management of CRIB Project, this function will be performed automatically.)

21.22 Alert the Project Director (or the computer monitor) to any errors, impracticalities or redundancies in the material of the banks.

21.3 Contribute materials to the bank and so develop their professional competencies. Specifically, they should:

21.31 Notify the Project Director of new ideas for CRIB items, either in the form of extensions of or modifications to existing materials, or of completely new subject areas.

21.32 Be prepared to attend meetings designed to achieve cohesiveness among teachers using CRIB Project materials and to promote liason between teachers and the rest of CRIB Project organization.

21.33 Participate during the term and in summer writing sessions where new materials will be prepared by groups of two or three teachers.

Additional role items:

266.

Agree Absolutely

Agree BUT

Absolutely Agree BUT

Undecided . . . BUT . . .

Decided BECAUSE
Disagree

Lack required background

CRIB PROJECT DIRECTOR AND STAFF

31. Director of CRIB Project

To the Director, in conjunction with his staff, will fall the overall responsibility for the operation, maintenance and expansion of CRIB Project. Specifically, he should:

31.1 Oversee the operation of the banks by

31.11 Receiving and collating the feedback from the the teachers and curricular associates concerning the material in the banks.

31.12 Organizing any meetings of teachers and/or curricular associates during term-time to consolidate teacher response to CRIB Project materials.

31.13 Organizing and operating the out-of-term writing sessions by teachers, curricular associates, curriculum specialists, reading specialists, scientists, and others.

31.14 Deciding in which areas and in which directions CRIB Project materials should be updated, upgraded and expanded.

31.15 Receiving and collating the information from the Instructional Media Centres concerning new developments in audio-visual material availability.

31.16 Receiving and collating the information from the library services on the new developments in library material availability.

Agree Absolutely
Agree BUT...
Undecided BECAUSE...
Disagree BECAUSE...
Lack required background

Agree Absolutely	Agree BUT...	Undecided BECAUSE...	Disagree BECAUSE...	Lack required background
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31.2 Encourage the growth of the CRIB Project concept by:

31.21 Conducting in-service meetings with teachers in the schools who are either non-users or are not using the banks to their full potential.

31.22 Meeting with administrators in the schools to explain the purpose and scope of CRIB Project and to solicit support for the activities associated with CRIB Project from school administrators.

31.23 Meeting with administrators in Central Office to explain the purpose and scope of CRIB Project and to solicit support in the promotion of the activities of the Project.

31.24 Attending, when invited, professional development sessions in other school systems who wish to understand the CRIB Project concept.

31.25 Attending to the publication in learned journals and other suitable places of appropriate aspects of CRIB Project.

31.3 Establish lines of communication with the appropriate authority in Central Office to whom CRIB Project is accountable so that Central Office decision-making shall be expedited.

(61.)

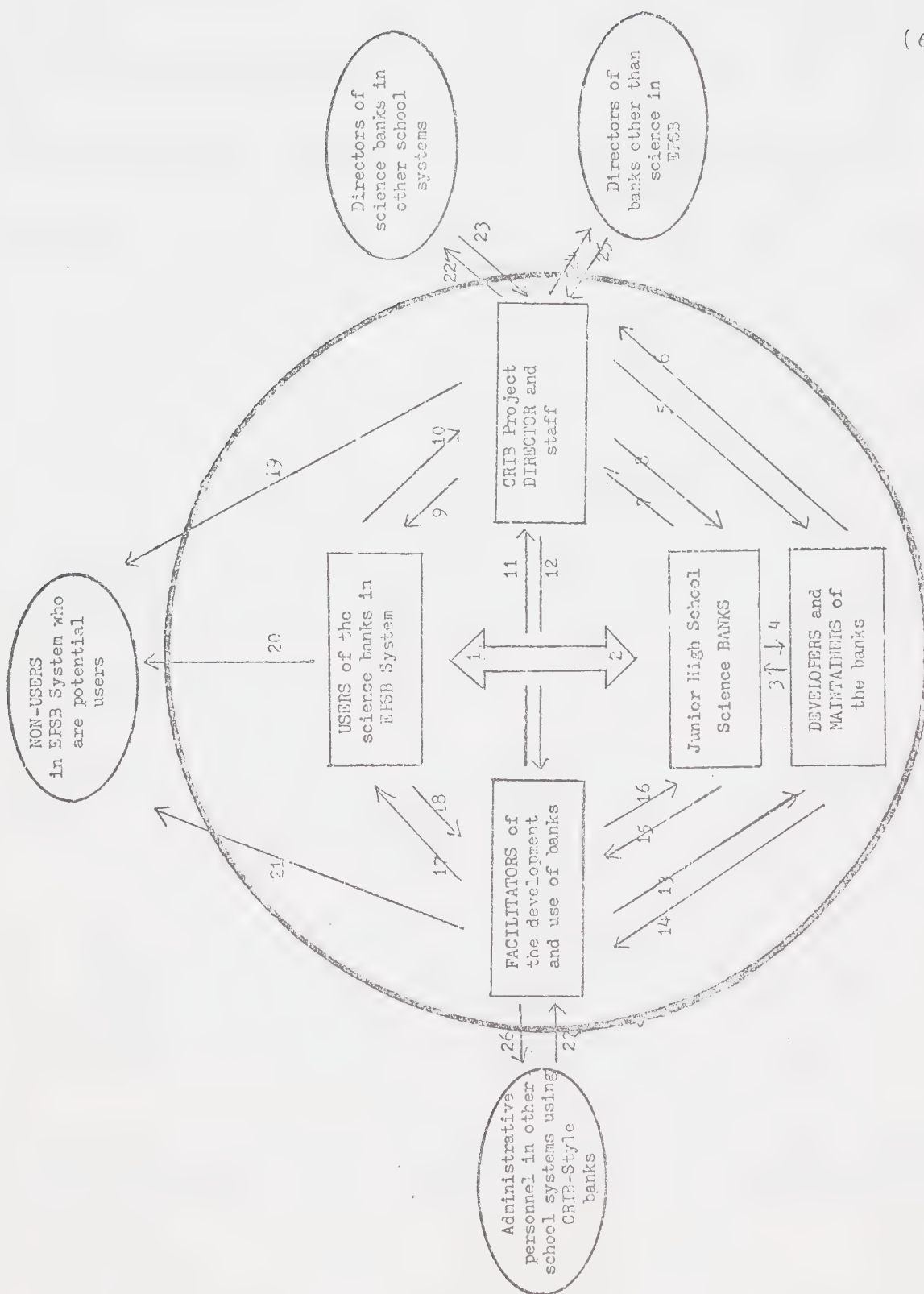


Figure 1. Scheme of Idealized Model

A P P E N D I X IThe Objectives of CRIB Project*

1. To apply information storage, retrieval and dissemination techniques to curriculum, instruction and evaluation in science teaching.
2. To make information available to teachers on as many alternatives as possible in curriculum, instructional materials and methods, and evaluation.
3. To determine the dynamics and evolution of a data bank operation from which a prototype can be developed for other subject areas.
4. To enable a greater diversification of curriculum in junior high school science.
5. To enhance individualization of instruction on the basis of the extensive alternatives suggested in the information bank with respect to learning modes and student abilities.
6. To increase the professional involvement of teachers in curriculum change by providing them with a vehicle for sharing ideas, and engaging in other cooperative efforts.
7. To enhance the teacher's opportunities for continuous instructional improvement in science.
8. To increase the professional involvement of teachers in the curriculum change process on the basis of the many alternative topics, activities, materials, etc., in the information banks.
9. To provide an important vehicle for continuous professional development of teachers by:
 - a) presenting materials enabling them to develop programs,
 - b) involving teachers in the building and revising of the banks,
 - c) providing the opportunity for teachers to evaluate the operation and contents of the banks,
 - d) sharing ideas, materials and engaging in cooperative efforts.

*The wording of the objectives for CRIB Project has changed slightly over the years. This list has been compiled from the various proposals for funding.

APPENDIX 2

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-
- 1.1 Associate Superintendent of Curriculum should strongly support CRIB Project applications for a reasonable amount of financial and logistic support.
-

SCHOOLS PERSONNEL COMMENTS:

Must have sufficient information to determine how much support to give CRIB compared to other projects.

CRIB is not the absolute or final word in curriculum.

. . . but for what length of time in relation to other demands?

(I) question this role.

Keep other possibilities in mind.

Within his overview of total curriculum requirements.

CENTRAL OFFICE PERSONNEL COMMENTS:

The "reasonable" amount of financial and logistic support must be monitored rationally.

There would be a conflict of priorities when considering this project in the light of overall system needs.

(Are not) "strongly support" and "reasonable amount" mutually exclusive?

Only if (the banks) work, and if they are effective and efficient.

- 1.2 Associate Superintendent of Curriculum should open the requisite lines of communication within EPSCB system so that the multitude of linkages can operate efficiently.
-

SCHOOLS PERSONNEL COMMENTS:

Could really only occur satisfactorily if 1.1 were of highest priority.

Once committed to an idea, (he) should support (it) until (he) has information that idea (is) no longer worthy of support.

How? Money? Cannot enforce easily.

CENTRAL OFFICE PERSONNEL COMMENTS:

Primarily role of Assistant Superintendent.

Linkages require time and input - which are more than just a matter of communication!

- 1.3 Associate Superintendent of Curriculum should open lines of communication to his counterparts in other school systems with a view to the ultimate coordination of banks similar to those of CRIB Project which might be developed in these systems.
-

SCHOOLS PERSONNEL COMMENTS:

Not convinced that CRIB is the ultimate.

The more systems involved, the more feedback possible.

Could really only occur satisfactorily if 1.1 were of highest priority.

In order to be able to implement an idealized model of CRIB a great deal of financing would be required, therefore I feel other

systems would have to become (involved). This means that 1.3 would be a vital role for the Associate Superintendent.

We need a common "core" within each discipline within Alberta.

Would this spread our resources too thin?

As long as this does not bring about involvement that makes EPSB teachers, C.A.'s, etc., expend more energy than they can possibly provide, thus having to do less within the system.

CENTRAL OFFICE PERSONNEL COMMENTS:

This might be a second step after full implementation and evaluation within our own system. The many additional problems encountered outside our own system because of differing philosophies, curriculums, etc., would cause unnecessary complications if introduced too early.

Or see that this is done.

The people using CRIB should open communications and the Associate Superintendent should come in later.

The Dept. of Education should also be involved.

Careful preplanning is mandatory in this case.

Share this (role) with Assistant Superintendent and Directors.

As things stand, that is a Department of Education role.

Vested interests in such things as equipment, format of data, rules regarding update privileges, etc., are very serious barriers to cooperation. Conversion costs can be high.

1. Associate Superintendent - additional role items and comments.

SCHOOLS PERSONNEL COMMENTS:

First priority should be to the system.

CENTRAL OFFICE PERSONNEL COMMENTS:

The Associate has too many divergent problems with budget, board, parents, etc. Hence he must not make CRIB his ultimate concern. (He is responsible for too many other areas as well.)

Investigate relationships or applicability in other curricular areas.

Approve or formulate curricular parameters for CRIB. Provide and set priority for CRIB approach in curriculum.

Demand a product of high quality.

Ensure that implementation is real rather than superficial.

2.1 Assistant Superintendent Curricular Services should coordinate the work of his Directors of Curriculum Development, Curriculum Supervision and Professional Development.

SCHOOLS PERSONNEL COMMENTS:

This has nothing to do with CRIB.

CRIB is not the absolute or final word in curriculum.

The degree to which this should be done is open.

CENTRAL OFFICE PERSONNEL COMMENTS:

There would be a conflict of priorities when considering this project in the light of overall system needs.

Not clear on the relevance of the statement in terms of CRIB.
I agree but this item transcends the purpose of this study and is not unique to it - therefore it's a poor item here.

- 2.2 Assistant Superintendent Curricular Services should strongly support CRIB Project applications for a reasonable amount of financial and logistic support.
-

SCHOOLS PERSONNEL COMMENTS:

Depends on TOTAL curriculum picture.
Only if his subject area was science.
Assuming CRIB is of high priority.

CENTRAL OFFICE PERSONNEL COMMENTS:

Depends how "strongly" other aspects also have to be considered.
Only if the CRIB route proves itself after a reasonable pilot.
Also applies to other curricular projects which may be of equal or greater priority.
This "strong support" must be guided by priorities of other areas, and ever-increasing budget restraints.

- 2.3 Assistant Superintendent Curricular Services should open the requisite lines of communication within EPSB system so that the multitude of linkages can operate efficiently.
-

SCHOOLS PERSONNEL COMMENTS:

CRIB is not the absolute or final word in curriculum.
The difficulty might be in "tokenism" - (he) does it because he feels he should but let it atrophy.

CENTRAL OFFICE PERSONNEL COMMENTS:

Must work with his associate superintendent in this.

2. Assistant Superintendent Curricular Services - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

Other priorities?

CENTRAL OFFICE PERSONNEL COMMENTS:

CRIB is but one area for this position.
Make certain that the personnel referred to in 2.1 are fully cognizant of CRIB.

- 3.1 Assistant Superintendent of Research and Evaluation should have an accurate and detailed picture of how CRIB Project operates.
-

SCHOOLS PERSONNEL COMMENTS:

I feel that this role lies more in Curriculum than in Research and Evaluation. He is responsible insofar that R & E funds CRIB as (a) research project.
A general position may be sufficient for his position.
...to a point.

CENTRAL OFFICE PERSONNEL COMMENTS:

That should really be the Project Director's role.

I would think that the Assistant Superintendent would also have responsibilities for many other R & E projects.

- 3.2 Assistant Superintendent of Research and Evaluation should appreciate that CRIB Project is a dynamic system and like all such systems it should not be left unattended lest it either lose efficiency or develop eccentricities.
-

SCHOOLS PERSONNEL COMMENTS:

Assuming the idealized model is realistic.

...but continued change may decrease the effectiveness of CRIB.

CENTRAL OFFICE PERSONNEL COMMENTS:

It may take too much attention.

Assistant Superintendent would delegate this to a Director or a Supervisor.

This priority should be given by the Associate Superintendent of Curriculum.

- 3.3 Assistant Superintendent of Research and Evaluation should ensure that his directors are conversant with and sympathetic to these considerations.
-

CENTRAL OFFICE PERSONNEL COMMENTS:

Important!

The amount of time which can realistically be devoted to the maintenance of such a system without additional staff could be a concern here.

3. Assistant Superintendent of Research and Evaluation - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

Priorities in subject matter vary.

Possibly a "monitor and facilitate" role is adequate.

CENTRAL OFFICE PERSONNEL COMMENTS:

CRIB cannot and should not be considered as a major priority to other curricular areas.

Supervisor of Science carries the greatest responsibility for ensuring that the CRIB Project maintains its course.

Allocate a priority level for CRIB type projects.

- 4.1 Director of Curriculum Development should strongly support CRIB Project applications for a reasonable amount of financial and logistic support.
-

SCHOOLS PERSONNEL COMMENTS:

Budget priorities considered.

...within its limitations.

Depends on total picture.

(I) object to word: "strongly". (The role item) would apply only if convinced that this is positive and proper curriculum development project as defined in Section 1.

CENTRAL OFFICE PERSONNEL COMMENTS:

Only if it's the best route. CRIB may be too ineffective and cumbersome - it may be too difficult to update - it may not do for pupils what you people think it will - and what are or will be the unanticipated negative outcomes?

Not at the expense of other projects.

In the light of overall subject area and grade level needs.

- 4.2 Director of Curriculum Development should open the requisite lines of communication within EISB system so that the multitude of linkages can operate efficiently.

SCHOOLS PERSONNEL COMMENTS:

(This) could be very difficult to enforce.

CENTRAL OFFICE PERSONNEL COMMENTS:

Interfaced with his assistant, associate superintendent.

He does not have access to all necessary lines of communication and even if he did this would (not) necessarily ensure that the multitude of linkages will operate efficiently. Communication has to contend with other variables as well.

- 4.3 Director of Curriculum Development should monitor the continued well-being of CRIB Project after the completion of the first draft of the bank materials.

SCHOOLS PERSONNEL COMMENTS:

The Director's responsibilities are of a more general nature and not specifically associated with any one curriculum area, at least not in the detail implied in CRIB.

Director of Program Supervision should maintain this role.

Not certain if this (is an) appropriate role. If (he) felt that this is fantastic curriculum development, then yes.

Otherwise would leave to Science Supervisor.

Role too far removed.

. .or appoint someone to.

It has already been done.

Monitor through his/her supervisors.

CENTRAL OFFICE PERSONNEL COMMENTS:

Extent of monitor must be relative to lack of curriculum personnel directly responsible to him.

Possible only in a general way due to many other subject areas and grade levels to consider.

What do you mean by "monitor"?

A general limited monitoring. Day-to-day specific monitoring would be handled by the Supervisor and Director of the bank.

Or see that it is monitored and the information supplied to him.

- 4.4 Director of Curriculum Development should take the requisite steps to ensure that the objectives of the Project are continually under review.
-

SCHOOLS PERSONNEL COMMENTS:

The responsibilities for implementation of this aspect of CRIB should be that of the Science Supervisor, rather than the Curriculum Director.

Or appoint someone to.

Can delegate this as well.

Should also be in close cooperation with the Science Super and Director of CRIB.

You can only improve things so much and then it is bound to weaken.

Director of Program Supervision should maintain this role.

CENTRAL OFFICE PERSONNEL COMMENTS:

What intensity of review is intended by the term "continuously"?

Falls more under the responsibility of the Supervisor of Science.

Possible only in a general way.

- 4.5 Director of Curriculum Development should ensure that the necessary policy is devised and implemented so that CRIB Project moves to reflect the changing objectives.
-

SCHOOLS PERSONNEL COMMENTS:

With consultation of the Director of Program Supervision.

As long as he does not make the policy but ensures that the policy is changed.

Should also be in close cooperation with the science supervisor and Director of CRIB.

Why change objectives so often?

CENTRAL OFFICE PERSONNEL COMMENTS:

This may prove too much of a drain. Other subjects also need some consideration.

Could be at Assistant Superintendent level.

Ambiguous. Don't understand.

Falls more under the responsibility of the Supervisor of Science.

- 4.6 Director of Curriculum Development should cooperate with the Director of Curriculum Supervision and the Director of Professional Development to coordinate on-going efforts to increase the value of CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

Can delegate this as well.

If CRIB (is) depicted as (a) lighthouse curriculum development project.

CENTRAL OFFICE PERSONNEL COMMENTS:

Your assumptions appear again.

- 4.7 Director of Curriculum Development should exercise his responsibilities to ensure the appointment of high calibre Project personnel.
-

SCHOOLS PERSONNEL COMMENTS:

Best done by Supervisor of Science.

Leave some of these high-calibre people in the schools.

Difficult to broaden teacher base of project as high calibre personnel are limited in number.

(I) would feel that this is task of Science Supervisor.

CENTRAL OFFICE PERSONNEL COMMENTS:

Role of Supervisor of Science.

Or ensure that this is done.

Responsibilities in this regard are primarily that of the Supervisor. Would definitely play a minor role in appointment of personnel.

- 4.8 Director of Curriculum Development should incorporate CRIB Project into the master plan of total curriculum development of all subject areas at all grade levels.
-

SCHOOLS PERSONNEL COMMENTS:

Should be tested out thoroughly in one area first.

Only if and when proven successful vehicle for curriculum development.

Such a move, although idealistic and extremely valuable, would probably be far too expensive to implement.

This model should be applied only where it fits - with respect to various disciplines.

Assuming that the model is realistic for all curricular areas.

Disagree because he lacks the contact with field personnel which would enable him to make wise choices.

There must be a demand for it.

Some areas might not lend themselves to this.

CENTRAL OFFICE PERSONNEL COMMENTS:

After the workability of the Project has been established.

This necessitates a total system commitment which can only be given by the Associate Superintendent of Curriculum.

CRIB is not proven to be an efficient or effective way of handling other subject areas.

CRIB may not be the route to go.

I would have to know what research shows about the value of CRIB Project in the EPSB.

Format may not be appropriate to other areas.

Experience with CRIB, and evaluation of it, are required before such a sweeping assumption can be judged.

No assurance that the CRIB will work for all subject areas or

that personnel wish or can handle the development and operation of CRIB. Not sure whether a system the size of Edmonton could afford the personnel and other expenses necessary to operate a system CRIB.

4. Director of Curriculum Development - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

I think it essential that (CRIB Project) might not be curriculum development but rather development of professionalism.

Might wish to add 7.3 to roles.

CRIB may not fit all subject areas.

Do not force it down on the teachers - but let it work its way toward them so that they are ready for it and feel comfortable with it.

Most of these tasks should be delegated to involved subordinates with his role being one of monitoring and assistance under crisis conditions.

- 5.1 Director of Program Supervision should encourage the curricular associates and the consultants in their task of increasing and maintaining the most efficient use of the banks.
-

SCHOOLS PERSONNEL COMMENTS:

Should do so at a general level and more through praise. Direct encouragement from Supervisor (of Science and Health).

Possibly best done by Supervisor of Science and Health.

Through supervisors.

This assumes that CRIB is the number one priority in the system.

CENTRAL OFFICE PERSONNEL COMMENTS:

Supervisor should have major responsibility here.

Provide support.

- 5.2 Director of Program Supervision should set up lines of communication between the teachers and the Director of CRIB Project so that any problems in the use of CRIB Project banks or any loss of momentum in its on-going evolution can be monitored and corrected quickly.
-

SCHOOLS PERSONNEL COMMENTS:

May not be the most effective person for this role.

I question the effectiveness. Just because the lines of communication are there does not mean that they will be used.

This seems to be more of a task for Supervisor of Science and Health.

Through supervisors and C.A.'s.

Or advise CRIB committee to do the corrections.

Possibly best done by Supervisor of Science and Health.

CENTRAL OFFICE PERSONNEL COMMENTS:

Responsibility of Supervisor of Science.

Realistically, can one Director be expected to interact with hundreds of teachers? Is a different interface required that is more practical?

Am not sure how this could practically be implemented from this position.

Supervisor should have major responsibility here.

Who is (the director of CRIB Project)?

(Director of CRIB Project is an) unnecessary position!

Is (Director of CRIB Project) some new job category? Or is it the Director whose responsibilities include CRIB?

It appears as though total concentration on the well-being of the CRIB bank is always necessary.

Role of science supervisor.

- 5.3 Director of Program Supervision should cooperate with the Director of Professional Development and Director of Curriculum Development to coordinate on-going efforts to increase the value of CRIB Project to its users.

SCHOOLS PERSONNEL COMMENTS:

Through supervisors and CA's.

CENTRAL OFFICE PERSONNEL COMMENTS:

In time its value should be realized by the teachers.

5. Director of Program Supervision - additional role items and comments.

SCHOOLS PERSONNEL COMMENTS:

EPSB distinguishes supervision and development as newly developed and ongoing. If it becomes one more than the other, then that Director (is) less affected by program.

These questions appear to me to (be) meaningless. You need cooperation and understanding at all levels.

Give appropriate recognition to those who devote time and effort to the development of CRIB (in particular the classroom teachers).

CENTRAL OFFICE PERSONNEL COMMENTS:

Work closely with the Directors of Research and Evaluation. He should be ensuring that the evaluation be conducted objectively.

- 6.1 Director of Professional Development should promote the view that participation in writing sessions of CRIB Project is, as the Project rationale puts it, one of the highest forms of professional development available.

SCHOOLS PERSONNEL COMMENTS:

He must not be so aggressive as to close the door to contributions made by teachers who do not want to be writers.

May be a divisive factor rather than promoting.

This assumes that CRIB is the number 1 priority in the system.

CENTRAL OFFICE PERSONNEL COMMENTS:

That is not true for some disciplines. It may be true for Junior High science, but not for social studies.

What priority in terms of other system projects?

This point is very biased.

- 6.2 The Director of Professional Development should encourage the Project Director in his role of professional development worker both within and outside the EPSB system.
-

SCHOOLS PERSONNEL COMMENTS:

Project Director should not have to be encouraged to do this since he should be committed to the Project.

How far without?

Disagree because of the phrase: "outside the EPSB system".

Let's not expand his efforts too far beyond the EPSB system.

CENTRAL OFFICE PERSONNEL COMMENTS:

This may be asking a bit too much. Leave that to the various superintendents.

Primary responsibility to the system; too much outside system would affect primary responsibility.

May be constrained outside the EPSB system.

What authority does he have outside the EPSB system?

- 6.3 The Director of Professional Development should cooperate with the Director of Curriculum Development and Director of Curriculum Supervision to coordinate on-going efforts to increase the value of CRIB Project to its users.
-

NO COMMENTS

6. Director of Professional Development - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

These questions appear to me to (be) meaningless. You need cooperation and understanding at all levels.

CENTRAL OFFICE PERSONNEL COMMENTS:

Facilitate necessary inservice sessions related to CRIB as he controls the system's inservice budget.

- 7.1 Director of Research should strongly support CRIB Project applications for a reasonable amount of financial and logistic support.
-

SCHOOLS PERSONNEL COMMENTS:

Depending on relative importance of other budget considerations. Priorities have to be considered.

Within total picture.

What is meant by a reasonable amount of financial support? Does a system of our size have adequate finances to implement an idealized CRIB model? My concern here is whether or not other departments would be willing to make concessions and suffer budget cutbacks in order to implement the idealized model. I somehow doubt it.

CENTRAL OFFICE PERSONNEL COMMENTS:

This has been done.

Separate budgets. It already is funded.

- 7.2 Director of Research should open lines of communication to his counterparts in other school systems with a view to the ultimate coordination of banks similar to those of CRIB Project which might be developed in these systems.
-

SCHOOLS PERSONNEL COMMENTS:

What is the role of CRIB in the world?

His role should be more exclusively concerned with the status of CRIB in his own system. Other personnel should have this role.

This assumes that such counterparts exist in other systems.

Provincial government should put in personnel and money to act as a go-between the various systems.

Would want to guard against outright "robbing". If no contribution (is) made by outside users, then some financial aid should be forthcoming from their school systems.

CENTRAL OFFICE PERSONNEL COMMENTS:

Via the Department of Education.

With the Supervisor of Science.

Should be the function of Assistant Superintendent of Curricular Services and Directors of Curriculum Development and Supervision.

- 7.3 Director of Research should be alert for opportunities to extend CRIB Project into other areas and grade levels.
-

SCHOOLS PERSONNEL COMMENTS:

The initiation of a CRIB belongs to the Director of Curriculum.

Should be tested thoroughly in one area first.

. . .where suitable.

Requires initiation from more basic levels than this.

CENTRAL OFFICE PERSONNEL COMMENTS:

It should first prove that it is as vibrant as you say it is.

Research Director cannot assume this bias toward CRIB. Has to look at all approaches on their merit.

Others such as Director of Program Development might have more opportunities to do this.

Only after in-depth evaluation of CRIB in science.

Share with Assistant Superintendent of Curricular Services and Directors of Curriculum Development and Supervision.

Not the responsibility of this person.

Other appropriate areas and grade levels. . .

7. Director of Research - additional role items and comments.

SCHOOLS PERSONNEL COMMENTS:

Promote research to ascertain the effects of CRIB on different variables.

Encourage teacher innovation (through financial assistance) to explore new and varied ideas related to the development, implementation or evaluation of CRIB.

Familiarize himself with the actual classroom operation of CRIB so that he has a better appreciation and understanding of CRIB at the "grass roots" level.

These questions appear to me to (be) meaningless. You need cooperation and understanding at all levels.

CENTRAL OFFICE PERSONNEL COMMENTS:

Apply for external funding for the Project if that is desired.

Assist in the development and conducting of the evaluation design for the Project.

Ensure that adequate Project management and control is carried out by the CRIB Project Director as long as CRIB receives research funding.

Ensure that project evaluation and reporting occur.

Ensure that Project results are reported to system personnel and personnel in other school systems.

8.1 Director of Evaluation should collate data from principals, curricular associates, users of CRIB Project and any other sources deemed necessary so that a current and comprehensive picture of CRIB Project is available.

SCHOOLS PERSONNEL COMMENTS:

The subject supervisor would likely be in a better position to perform this task.

Project Director does this.

(I) question this role item.

Evaluation of CRIB should be done by those who are directly involved with CRIB.

This can be done by the Project Director and submitted to the Director of Evaluation.

CENTRAL OFFICE PERSONNEL COMMENTS:

Has been done to date by Project staff.

Concern over time available and priority placement.

8.2 Director of Evaluation should monitor the concurrence of the implementation model of CRIB Project with what is actually taking place so that corrections may be made in either the model or the working of the Project.

SCHOOLS PERSONNEL COMMENTS:

Evaluation of CRIB should be done by those who are directly

involved with CRIB.

Is CRIB not the ideal model?

CENTRAL OFFICE PERSONNEL COMMENTS:

Concern over time available and priority placement.

Has been done to date by Project staff.

- 8.3 Director of Evaluation should provide for the continued assessment of the impact of CRIB Project on student learning.
-

SCHOOLS PERSONNEL COMMENTS:

This would be very difficult.

If such is possible.

As long as this is not used for teacher accountability.

Student learning is greatly influenced by the teacher and his methods - CRIB plays no role here.

CENTRAL OFFICE PERSONNEL COMMENTS:

Concern over time available and priority placement.

May more appropriately be the role of the Director of Pupil Assessment in association with Supervisor of Science and Health and Directors of Research and Evaluation.

This should be done even prior to the evaluation you are conducting through this questionnaire.

8. Director of Evaluation - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

An assessment of CRIB materials and their use on the professional development of science teachers.

CENTRAL OFFICE PERSONNEL COMMENTS:

It seems that Directors of Evaluation, Pupil Assessment and Educational Data Processing and the Directorate of Information Systems would all need to work very closely on this Project in data collection, assessment and evaluation throughout the Project.

Should help to ensure that objectives are stated in measureable terms.

Should help monitor very closely all procedures, e.g. identifying target populations.

Should help to identify and/or develop questionnaires and other data-collecting instruments.

Work in cooperation with the Supervisor of Science and Director of CRIB. It would place an unduly heavy role on the Director if he were expected to carry out all the functions suggested.

- 9.1 Director of Educational Data Processing should arrange for the processing of information on the extent of CRIB Project material use.
-

SCHOOLS PERSONNEL COMMENTS:

This assumes that you get proper feedback.

CENTRAL OFFICE PERSONNEL COMMENTS:

This position no longer exists.

- 9.2 Director of Educational Data Processing should work in conjunction with the Directors of Evaluation and Pupil Assessment to provide for an all-round evaluation of CRIB Project in the aspects of pupil improvement and CRIB Project improvement.
-

SCHOOLS PERSONNEL COMMENTS:

Where can one find the time and money?

As long as this is not used for teacher accountability.

CENTRAL OFFICE PERSONNEL COMMENTS:

Ideal; next to impossible to involve Director of Educational Data Processing because of other priorities and commitments.

9. Director of Educational Data Processing - additional role items and comments.
-

CENTRAL OFFICE PERSONNEL COMMENTS:

Work towards the computerization of the CRIB materials. Work closely with Director of Information Systems.

Provide statistics to Project Director on access to CRIB files on such things as: (a) new items, (b) updated items, (c) items removed, (d) access broken down by date, school, number of items extracted, and (e) trends in all the foregoing. Is this what was meant by 9.1 above?

This position has been transferred to another Department and renamed Director of Student Accounting and School Information.

- 10.1 Directorate of Information Systems should understand the necessity of ultimately transferring the materials in and the management of the bank to a computer facility.
-

SCHOOLS PERSONNEL COMMENTS:

This seems to be far in advance of the present state of the banks.

Strongly feel that the present Keysort materials could be cheaply printed into teacher banks.

Expensive - may not make it much more useful.

(Undecided because of) cost, and I don't see any problem with Keysort cards.

Is the majority of teachers convinced of the usefulness of the cards?

CENTRAL OFFICE PERSONNEL COMMENTS:

Must not be a priority item.

Provided that the necessity is determined by curriculum.

Premature. Let's evaluate first.

-
- 10.2 Since computer use in the school system is likely to be initially mostly by administrative and counselling services and only subsequently by such curricular projects as CRIB Project, there should be an awareness of the future curricular needs of the schools when a computer network with remote terminal capabilities is being designed.
-

CENTRAL OFFICE PERSONNEL COMMENTS:

Says who?

- 10.3 Any computer system which is recommended to EPSB by the Directorate should have the requisite flexibility and capacity for non-administration (e.g. curricular) projects.
-

CENTRAL OFFICE PERSONNEL COMMENTS:

Irrelevant to the subject.

Computer system should reflect needs of CRIB and curriculum and users.

Or a second and separate facility should be provided for curricular and instructional uses.

- 10.4 The Directorate should prepare the specifications of a computer system which would be sufficiently flexible to handle CRIB Project management over and above the projected needs of administrative and counselling services.
-

SCHOOLS PERSONNEL COMMENTS:

Not convinced that computer would aid efficiency.

We should be careful that computer hardware does not take away the resources that would be needed or be available if a choice were necessary for the "human elements" - teachers, writers, etc.

In consultation with CRIB Director.

In consultation with Project Director.

CENTRAL OFFICE PERSONNEL COMMENTS:

Other non-administrative needs may take priority.

- 10.5 The Directorate should prepare an estimate of the initial cost of transferring CRIB Project materials and management to a computer system.
-

SCHOOLS PERSONNEL COMMENTS:

In consultation with CRIB Director.

CENTRAL OFFICE PERSONNEL COMMENTS:

. . . and subsequent costs of keeping it there.

The present format of CRIB may not be compatible with computer storage

- 10.6 The Directorate should assist in the development of the C.A.I. potential of the CRIB Project materials.
-

SCHOOLS PERSONNEL COMMENTS:

Should have input to present format with an eye to preparation of material for the computer at some future time. Ease the changeover.

In consultation with CRIB Director.

This is in my estimation more a 'novelty' than an instructional aid, and adds another costly frill. Let's develop CRIB to a potential for teacher use at this moment.

CENTRAL OFFICE PERSONNEL COMMENTS:

Major involvement should be curricular.

- 10.7 Once the banks are computerized, information should be transmitted to the Project Director concerning unused or underused items in the banks.
-

SCHOOLS PERSONNEL COMMENTS:

Let's not take this to mean that this information is not useful.

A 'must'. Get rid of the deadwood.

If it is eventually computerized.

CENTRAL OFFICE PERSONNEL COMMENTS:

All usage should be reported, including 'overused' items.

On request or as specified by users, by curriculum personnel.

- 10.8 The Directorate should work with the Director of Educational Data Processing and the Director of Pupil Assessment to ensure that the evaluative functions can be incorporated into the computer management network.
-

SCHOOLS PERSONNEL COMMENTS:

As long as this is not used for teacher accountability.

CENTRAL OFFICE PERSONNEL COMMENTS:

...and Director of Program Supervision.

10. Directorate of Information Systems - additional role items and comments.
-

CENTRAL OFFICE PERSONNEL COMMENTS:

The current computing dept. (I.S.B.) is a business environment. Test banks and non-administrative applications will occur in spite of this department and not because of it. Any trial conversion should be done on some other system than here and be financed through a private consultation firm.

Computer facility must be available for continuous revision in the banks.

User input is critical in the implementation of the computer system prior to any conversion. Users must be able to easily access and use the banks and should have a say in how this will happen from their point of view.

I realize computers have a place in our world - but I'm not

so sure what that priority should be in terms of dollars for education.

-
- 11.1 Director of Pupil Assessment should monitor the progress of students of junior high schools so that an assessment can be made of their progress in knowledge acquisition and understanding of science.
-

SCHOOLS PERSONNEL COMMENTS:

Providing objectives as such have been agreed upon and made known to the teachers.

As long as this is not used in teacher accountability.

I question how this can be done.

How does this show the implementation of CRIB?

This, of course, (would) require a control group which under the idealized model of CRIB use would not exist. If it does, such a study would be most useful.

CENTRAL OFFICE PERSONNEL COMMENTS:

CRIB will contain all test items and questions except those used for survey purposes.

But there are probably other factors which affect "pupil attitude" in (a) much greater way - e.g. teacher personality and vitality.

How?

Only possible if objectives are updated and items revised accordingly.

In consultation with Supervisor of Science.

- 11.2 Director of Pupil Assessment should design a study to enable the contribution of CRIB Project to this student progress to be assessed.
-

SCHOOLS PERSONNEL COMMENTS:

I feel that this role (is) best suited for Director of Evaluation in conjunction with curriculum personnel.

Tough.

This, of course, (would) require a control group which under an idealized model of CRIB use would not exist. If it does, such a study would be most useful.

There is more to the teaching of science than CRIB.

How?

How can this be done if the use of CRIB is widespread? Would some teachers be denied any access to CRIB?

Only when initial development (is) completed.

As long as this is not used in teacher accountability.

With consultation with the Project Director.

CENTRAL OFFICE PERSONNEL COMMENTS:

The sorting out of such variables should be done by the Director of Evaluation.

In conjunction with Director of Evaluation and Supervisor of Science - many problems controlling numerous variables.

In consultation with Research and Evaluation.

Design (to be) coordinated by Director of Evaluation in conjunction with Director of Program Supervision and Director of Assessment.

Isn't this the responsibility of the Director of Evaluation?

Make sure this occurs before the computer is installed.

Not sure of the real value of this study.

Work closely with Directors of Research and Evaluation.

- 11.3 Director of Pupil Assessment should design a study to enable the contribution of CRIB Project to the students' attitudes towards science to be assessed.

SCHOOLS PERSONNEL COMMENTS:

This, of course, (would) require a control group which under the idealized model of CRIB use would not exist. If it does, such a study would be most useful.

In consultation with the Project Director.

How?

As long as this is not used in teacher accountability.

I feel that this role (is) best suited for Director of Evaluation in conjunction with curriculum personnel.

Too complex and not necessary; the teacher changes a student's attitudes towards science - not a project.

Yes, but what is its priority in relation to other educational matters?

This would require comparisons with non-CRIB groups which might go beyond EPSB jurisdiction.

How can this be done if the use of CRIB is widespread? Would some teachers be denied any access to CRIB?

CENTRAL OFFICE PERSONNEL COMMENTS:

Function of evaluation department of Dept of Educational Evaluation and Research.

In conjunction with Director of Evaluation.

Should be done by Director of Evaluation.

Do by or in consultation with Research and Evaluation.

Not sure of the real value of this study.

Work closely with Directors of Research and Evaluation.

The Director of Pupil Assessment is only responsible for assessing student progress and not the relationship between components of the learning process such as CRIB and learning.

- 11.4 Director of Pupil Assessment should relay the results of these two studies to the Director of CRIB Project and to those departments which can incorporate the results into their participation in CRIB Project.

SCHOOLS PERSONNEL COMMENTS:

How would it be used in teacher evaluation?

Too complex and not necessary.

If such studies are really possible.

Hopefully this will come down to the teachers' level.
 If one can truly get reliable data.
 I feel that this role (is) best suited for Director of
 Evaluation in conjunction with curriculum personnel.
 If such results can be obtained.

CENTRAL OFFICE PERSONNEL COMMENTS:

In consultation with Research and Evaluation.
 Function of evaluation department of Educational Evaluation
 and Research.

- 11.5 Director of Pupil Assessment should prepare a contingency
 plan for the meshing of the computer-stored pupil records
 with the students' records generated when CRIB Project is
 computer managed.
-

SCHOOLS PERSONNEL COMMENTS:

Must be through consultation with Project Director and
 CRIB Committee.
 Our evaluative techniques will need to have been tested.
 I can't incorporate this into my concept of CRIB.
 Whether CRIB exists or not, students' records and marks will
 be stored in computers.
 I don't "dig" computers.

CENTRAL OFFICE PERSONNEL COMMENTS:

Am not sure this would not better be done by Director of
 Educational Data Processing and ISB in consultation with Pupil
 Assessment.
 Function of school op.
 Should all be integrated. No need to distinguish once CRIB
 is fully operational.
 How did (the meshing of pupil records and CRIB Project
 records) surface? No prior mention of it was made or implied.
 This is a much bigger problem than may appear on the surface, and
 if it is to receive any serious consideration at all, then much
 more investigation, in a concerted fashion, is required than can
 be delivered in any "contingency plan".
 An assumption is made about computerization.
 Ambiguous.
 Sounds sensible! But I must confess that I can not get
 excited about the computer.
 This is placing undue importance of CRIB to student records.

11. Director of Pupil Assessment - additional role items and
 comments.
-

SCHOOLS PERSONNEL COMMENTS:

Visit classrooms where testing of students (on CRIB-used
 materials) is being carried out. . . A greater degree of
 familiarization with the classroom functioning of CRIB would serve
 a useful purpose.

CENTRAL OFFICE PERSONNEL COMMENTS:

All the assessment (except evaluation) material should be built by people with expertise in test construction.

Be directly and continuously involved in the development, modification of assessment materials in CRIB.

- 12.1 Supervisor of Science and Health should function as a mediator between other facilitators and the staff of CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

I feel that this role requires more than mere mediation - responsibility similar to role of Assistant Superintendent.

Within the constraints of his role.

Must work closely with CRIB Director if the administrative hierarchy is to be convinced.

Probably this position does not have the necessary authority in the C.O. hierarchy to accomplish this task.

CENTRAL OFFICE PERSONNEL COMMENTS:

He (she) should be the Project Director and responsible for it.

This person should act as Project Director.

Direct Project.

- 12.2 Supervisor of Science and Health should provide ideas and new directions for the Director of CRIB Project to follow.
-

SCHOOLS PERSONNEL COMMENTS:

Work jointly with CRIB Director.

(In) consultation with teachers, too.

Would expect most of the direction to come from feedback.

Would want to weigh carefully the merits of the ideas not from feedback sources.

Must be the evaluations of teachers, research and pupil assessment.

(He is) not the only one to do so.

Often a result of classroom experiences.

This should be done in cooperation with the Curriculum Director.

Possibly.

CENTRAL OFFICE PERSONNEL COMMENTS:

No such person (as Director of CRIB Project) exists - this should be done by the Supervisor.

- 12.3 Supervisor of Science and Health should undertake the integration of CRIB Project with other science programs operating in the System.
-

SCHOOLS PERSONNEL COMMENTS:

Within the constraints of his role.

If CRIB is good enough for junior high it should be at the other levels as well.

Depends on CRIB priority.

To what extent?

If they fit.

Only when CRIB has been effectively implemented at the intended level and thoroughly evaluated.

CENTRAL OFFICE PERSONNEL COMMENTS:

If workable and/or successful.

Depends upon funds, readiness of teachers at other levels to participate, support from Dept of Ed. and other government departments.

There's no evidence it's any good.

- 12.4 Supervisor of Science and Health should bring to the Project staff his knowledge of the new science materials that are being produced elsewhere.
-

SCHOOLS PERSONNEL COMMENTS:

This material should be forthcoming from the Director of Curriculum Development.

Sounds like valuable input.

- 12.5 Supervisor of Science and Health should provide the key contact with other systems for the initiation of consortium-type projects or other ways of extending CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

A person higher up in the hierarchy should do this as well.

Be the key contact, but let's get our system fully operational before expending energies elsewhere.

Others should also be involved. Those at higher level than Supervisor. But (I) must agree because you do not want to close the door on any possibility for expansion.

I feel that this should be shared with. . .Director of Curriculum Development.

This may be a role for the Project Director. We still have no real definition of the regional limit goals on GRIB. (The) answer depends on how large it should be.

CENTRAL OFFICE PERSONNEL COMMENTS:

Ultimately needs support of higher authority - some sort of agreement (is) required at Superintendent's level.

Only in Science and Health.

With Director of Research.

If the route is good then yes.

- 12.6 Supervisor of Science and Health should take the requisite steps to ensure that the materials in the banks are continually revised and expanded.
-

SCHOOLS PERSONNEL COMMENTS:

Where need arises.

Within reason and budget.

Should be the concern of CRIB Director.

Role of CRIB Director.

CENTRAL OFFICE PERSONNEL COMMENTS:

More a task for CRIB Project Director.

Was this not part of the Project Director's task?

12. Supervisor of Science and Health - additional role items and comments.

SCHOOLS PERSONNEL COMMENTS:

The Supervisor of Science and Health must secure adequate funding for the project while working along with the Director of CRIB.

More frequently visit classrooms to see CRIB in action - in all of its phases.

I feel that this position calls for more responsible actions than the six roles mentioned above.

- 13.1 Personnel in the Instructional Media Centre should be aware of the materials which are used in the audio-visual banks of the Project. These include films, film-loops, etc.

SCHOOLS PERSONNEL COMMENTS:

No more so than they need to be aware of materials in any program. Does CRIB need special attention from all or can it operate within some of the existing frameworks of other departments?

It is not necessary.

Centre has other responsibilities too.

Through a group of interested science teacher writers.

Not only be aware but have copies available in IMC.

CENTRAL OFFICE PERSONNEL COMMENTS:

Also aware of materials not in the bank. They should be a resource center.

The need for a cross-reference facility is implied. Another reason for using a computer.

- 13.2 Personnel in the Instructional Media Centre should be aware of the kinds of A-V material that are especially pertinent to the needs of CRIB Project.

SCHOOLS PERSONNEL COMMENTS:

Do not give special attention or effort.

Through a group of interested science teacher writers.

Have copies available in IMC.

By responding to suggestions for purchase in a positive way.

-
- 13.3 Personnel in the Instructional Media Centre should inform the Project Director of additions of such material to the catalogues of the centre.
-

SCHOOLS PERSONNEL COMMENTS:

Information might be sent directly to the schools as well as to the Project Director.

...as he should do with all additions.

Inform Project Director of the available material in preview so recommendations can be made for purchase. . . through science groups.

CENTRAL OFFICE PERSONNEL COMMENTS:

Too demanding! IMC produces a catalogue periodically. CRIB staff can review it for items of interest, and then contact IMC.

And use usual system dissemination systems to inform teachers, etc.

- 13.4 Personnel in the Instructional Media Centre should inform the Project Director of new releases of suitable materials that could be obtained for the centre and for CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

Information might be sent directly to the schools as well as to the Project Director.

- 13.5 Personnel in the Instructional Media Centre should inform the Project Director if any materials which are referenced in the banks become unavailable.
-

SCHOOLS PERSONNEL COMMENTS:

It is especially crucial in this case to inform the CRIB user as soon as possible. If information of this type has to "filter down" to the classroom teacher through the "chain of command" it might reach the teacher too late.

CENTRAL OFFICE PERSONNEL COMMENTS:

Under structure determined by Project.

Time consuming! Let the computer do it!

- 13.6 Personnel in the Instructional Media Centre should work with the Directorate of Information Systems and the Director of Educational Data Processing to ensure that the centre will be able to mesh its management of its materials with the computer-managed operations of CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

CRIB must mesh with existing systems.

A "must".

CENTRAL OFFICE PERSONNEL COMMENTS:

You've made 'that' assumption again.

This has been done by ETS New Jersey although they now have gone out of test assembly via computer due to insufficient numbers of users requiring different test construction.

Director of Educational Data Processing role has changed.

13. Personnel in Instructional Media Centre - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

The IMC should have subject-area specialists who can perform most of the roles indicated.

Note: To make roles 13.1 - 13.6 feasible, only one or two staff members of the IMC should take on these roles.

IMC personnel should visit classrooms so that they can understand more thoroughly the teachers' particular needs (re equipment, facilities, etc.) in effective utilization of A-V materials.

Provide sufficient copies of material to be distributed to the schools for teachers' use.

CENTRAL OFFICE PERSONNEL COMMENTS:

Work closely with CRIB Project developers and maintainers in the initial development of suitable materials for CRIB.

- 14.1 The library services should be aware of all the materials in their catalogues which are mentioned or used in the materials of CRIB Project banks.
-

SCHOOLS PERSONNEL COMMENTS:

Should have a cataloguing system that is adaptable to the CRIB model.

Is this practicality possible?

As people change, it is difficult for incumbents to become totally aware of all resources catalogued.

"Have a level of awareness. . . ."

The people involved directly with CRIB can inform the Library Systems personnel of the materials pertinent to CRIB.

Not practical unless subject-area specialists would be set up.

. . . although the trend has been to make CRIB self-sufficient.

CENTRAL OFFICE PERSONNEL COMMENTS:

Might be expecting too much of them.

Time-consuming, therefore expensive.

Catalogues are not available in Library Services.

CRIB people should look for materials in the library.

- 14.2 The library services should be aware of the kinds of library materials which are especially pertinent to the needs of CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

Possibly assigning this responsibility to interested

teacher-writers would be the reasonable route to take.

To the degree that it is possible.

The people involved directly with CRIB can inform the Library Systems personnel of the materials pertinent to CRIB.

CENTRAL OFFICE PERSONNEL COMMENTS:

To the extent that they can.

Time-consuming, therefore expensive.

CRIB people should look for materials in the library.

- 14.3 The library services should inform the Project Director of additions of such materials to the catalogues of the services.
-

SCHOOLS PERSONNEL COMMENTS:

Must be a better method.

Director should also take steps to inform himself. He cannot expect others to keep him fully informed at all times for all things connected to the Project.

CENTRAL OFFICE PERSONNEL COMMENTS:

Time-consuming, therefore expensive.

CRIB people should look for materials in the library.

Catalogues are not available in Library Services.

And use usual information dissemination systems.

- 14.4 The library services should inform the Project Director of information on new releases of suitable materials that could be obtained for the libraries and for CRIB Project. Such materials would include text-books, written materials from new curriculum projects, materials from industrial sources such as Syncrude, journals devoted to the teaching of science, and so on.
-

SCHOOLS PERSONNEL COMMENTS:

Would be most useful, must be channelled into CRIB so that they are available at the teacher level.

Through involved teacher-writers or other similar route.

CENTRAL OFFICE PERSONNEL COMMENTS:

Do they have the necessary personnel to do this?

Time-consuming, therefore expensive.

- 14.5 The library services should inform the Project Director if any materials which are used or referenced in the bank items become unavailable or superseded by later editions.
-

SCHOOLS PERSONNEL COMMENTS:

Send a general list from which Project Director ferrets out what he needs to know.

Time would not permit library personnel to complete this function.

Through involved teacher-writers.

CENTRAL OFFICE PERSONNEL COMMENTS:

Time consuming and expensive.

Doubt that any library service can be that knowledgeable about any one area, let alone all subject area projects.

- 14.6 The library services should work with the Directorate of Information Systems and the Director of Educational Data Processing to ensure that the libraries will be able to mesh their cataloguing and management of their materials with the computer-managed operations of CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

The library has a system. CRIB is building one. It may be possible and easier for CRIB to mesh with their system.

CENTRAL OFFICE PERSONNEL COMMENTS:

Essential.

- 14.7 The library services should be familiar with the references to library materials which are mentioned in the materials in the banks, and ensure that they are available in school and central libraries.
-

SCHOOLS PERSONNEL COMMENTS:

Through involved teacher-writers.

Monies?

Project Director will have to assist in familiarization.

Not practical.

CRIB personnel could inform the library personnel of required materials.

. . . although the trend has been to make CRIB self-sufficient.

CENTRAL OFFICE PERSONNEL COMMENTS:

Time consuming and expensive!

So should CRIB people.

It is the responsibility of Project Director or Science Supervisor to request that the items are made available.

14. The library services - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

I feel that Library Services, unlike the AV personnel, will play a lesser role because the school centres will have to stock the materials.

Note: Only one or two staff members of the Library System should take on roles 14.1 - 14.7.

Inform the CRIB user if any materials become unavailable or are superseded by later editions.

Library personnel could make an extra effort to provide more copies of reference materials to be made available for the teachers' use.

Subject area specialists in the library system would make it

possible to carry out these roles effectively.

CENTRAL OFFICE PERSONNEL COMMENTS:

The onus for new materials can never be put onto the library staff. It must be on CA's, consultants and science people. The library can't make CRIB the source of prime concern.

- 15.1 The Specialists in Reading, Language and Mathematics should evaluate the products of the writing sessions to ensure that they are of the appropriate level for their intended use. Most attention will need to be paid to the materials for student use.
-

SCHOOLS PERSONNEL COMMENTS:

Desirable but does not seem too practical.

YES! YES! YES!

Could a science teacher not be capable from his own experience?

A "must" because most materials are too high of a reading level.

Must have an understanding of scientific literacy. A better approach would be to provide inservice to writers.

Individual users (teachers) are in the best position to determine the reading level of their students - I feel it incumbent upon these teachers to modify work as required.

...assuming they have time.

I disagree to some extent since I feel that many of the specialists may be completely unfamiliar with the scientific "jargon" or terminology.

I'm uncertain whether time or expenditure will permit this to happen.

CENTRAL OFFICE PERSONNEL COMMENTS:

Time consuming.

Too broad.

- 15.2 The Specialists in Reading, Language and Mathematics should evaluate the materials already in the banks to ensure that they are of the appropriate level for their intended use.
-

SCHOOLS PERSONNEL COMMENTS:

Persuasion in this area might be difficult. CRIB writers using simple "fog index" might do the job as well. After all, they're supposed to know the ability level of the students.

YES! YES! YES!

(This would be) most helpful.

Many of the specialists may be completely unfamiliar with the scientific "jargon" or terminology.

That should be worked out automatically if the field teachers work on lessons which are relevant and meaningful for their classes.

I'm uncertain whether time or expenditure will permit this to happen.

Very important, especially for lower ability students.

CENTRAL OFFICE PERSONNEL COMMENTS:

Too broad.

Time consuming.

These people are overworked with their own programs at present.

15. The Specialists in Reading, Language and Mathematics - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

Indicate possible areas of correlation.

Suggest sequencing of units to avoid duplication and effect maximum utilization of basic skills and learning.

See students in action in the classroom using CRIB materials.

Assist the writing committees in preparing materials at the proper reading levels.

Be aware of the materials in the banks in order to incorporate into the Languages and Mathematics programs those skills that are fundamental and necessary in order to do the work.

CENTRAL OFFICE PERSONNEL COMMENTS:

Seek suggestions from Director of Evaluation.

Be involved in the development and maintenance of CRIB.

- 16.1 Principals should be aware of the existence of CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

A person more important than the principal would be Science Head.

CENTRAL OFFICE PERSONNEL COMMENTS:

They should be at the "knowledge" level.

- 16.2 Principals should be sufficiently familiar with the rationale of the Project to understand how it resembles and differs from other curricular innovations.
-

SCHOOLS PERSONNEL COMMENTS:

Why him?

CENTRAL OFFICE PERSONNEL COMMENTS:

Is CRIB such (a curricular innovation)?

- 16.3 Principals should understand that use of CRIB Project materials by a teacher leads to a more efficient and productive use of the teacher's time.
-

SCHOOLS PERSONNEL COMMENTS:

Are we not presupposing this aspect of CRIB?

If this can happen!

Depends on the experience of the teacher.

Up to a point - it can also be misused.

CENTRAL OFFICE PERSONNEL COMMENTS:

Fine if true.

If this actually the case.

This, as far as I know, has never been quantitatively demonstrated.

Says who - you've already decided it's great so why am I filling this out?

This is a value judgement which has not been verified.

Biased.

- 16.4 Principals should understand that the rationale of the Project encourages teachers to participate in group writing sessions to enrich the professional abilities of these teachers.

CENTRAL OFFICE PERSONNEL COMMENTS:

Many teachers are reluctant to participate.

Does it (encourage teachers)? How do you know?

- 16.5 Principals should understand that participation in the group activities of the Project may require release time for the teachers concerned.

SCHOOLS PERSONNEL COMMENTS:

I feel. . .that release time depends upon subs and non-parental complaints.

The students lose when a teacher leaves his classroom - the writing should be done at times other than during the teaching day.

This is not difficult to understand and easy to implement if additional staff is provided for flexibility.

Principals are going to be reluctant to do this unless they know substitutes will be provided.

If cost of a sub will cover that time and not the administrator.

Principals are not in a position to provide the necessary substitute services and frequently encounter difficulties in obtaining these.

Must be arranged in such a way as to minimize disruption of classtime.

CENTRAL OFFICE PERSONNEL COMMENTS:

As long as teachers are not away too much.

Really profound.

May be beyond principal's power to control. Budget limitations may not permit.

- 16.6 Principals should facilitate the provision of release time for active participation in group writing sessions.

SCHOOLS PERSONNEL COMMENTS:

Providing substitutes are available.

This must originate from Central Office on an organized basis.

I feel. . .that release time depends upon subs and non-

parental complaints.

This depends on the staffing for the school which involves decisions made at a higher level.

Scheduling within the school is difficult at best.

Can only be made feasible if extra staffing allowances are made by Central Office.

Release time should not be "cover classes" but well qualified persons with an interest in science education.

. . . but they should not be expected to cover teacher loss of time by internal substitution. They should be aware of the way in which substitutes could be made available by the School Boards.

CENTRAL OFFICE PERSONNEL COMMENTS:

Teaching comes first.

Is this in their power?

Internal school arrangements for release time have never proved successful. Principals can only request substitute services.

- 16.7 Principals should be aware of their influence on the adoption or rejection of innovations by teachers in their schools.
-

SCHOOLS PERSONNEL COMMENTS:

Not one of his duties!

If time permits and if subject knowledge sufficiently strong.

I do not believe the administrator would discourage something promoted by Central Office.

CENTRAL OFFICE PERSONNEL COMMENTS:

Not restrictive to CRIB.

- 16.8 Principals should encourage non-users of CRIB Project banks to become users and full participants in the Project.
-

SCHOOLS PERSONNEL COMMENTS:

CRIB is good and very useful for the majority. It will not necessarily fit all.

Shared with the Project Director and Curricular Associates.

As long as CRIB can fulfil the needs of these teachers.

Principal should keep the Curricular Associate informed. (He) can then perform the indicated role.

Encouragement is necessary in all areas.

Principal is too far from science scene to do this.

Make them aware of it. They have to feel comfortable with it.

. . . but not from a position of authority.

Principal portion of this task (should be) left to Department heads, other science teachers, C.A.'s.

Must be voluntary.

CENTRAL OFFICE PERSONNEL COMMENTS:

Only if it's effective and efficient.

A value judgement assuming that CRIB is the only way.

Will depend on his assessment of the teacher's ability in the

subject and the adequacy of the job he is doing.

It must fit the philosophy of the school, especially with alternative schools.

16. Principals - additional role items and comments.

SCHOOLS PERSONNEL COMMENTS:

Encourage teachers in other subject areas to inquire about CRIB.

Provide opportunities (at staff meetings) for CRIB users to familiarize all teachers with CRIB.

Encourage intervisitations to science classrooms using CRIB.

CENTRAL OFFICE PERSONNEL COMMENTS:

Use CRIB to be more familiar with the curriculum programs and instructional methodologies used in his school.

Principals are to be educational leaders to the exclusion of their pet interests.

21.11 Teachers should make use of the banks to improve their efficiency and professional competence. Specifically, they should draw upon bank materials for planning their courses, acquiring necessary background information and preparing class materials and test items.

SCHOOLS PERSONNEL COMMENTS:

They should use the best sources they can find. Bank content does not yet include all course content.

Other sources should not be excluded.

The bank is current and is the "idealized bank" - has the most recent materials.

CENTRAL OFFICE PERSONNEL COMMENTS:

You've decided it will "improve".

We cannot force this use - it is highly desirable.

21.12 Teachers should make use of the banks to improve their efficiency and professional competence. Specifically, they should be prepared to use selected items from the banks as enrichment material for individual students who have that need.

SCHOOLS PERSONNEL COMMENTS:

The bank should not only be considered for enrichment, it makes it possible to choose programs for a wider spectrum of student abilities.

CENTRAL OFFICE PERSONNEL COMMENTS:

Not all teachers "need" CRIB. A teacher could structure a program that is just as efficient and effective as his own.

Degree of involvement will vary greatly and should not be forced.

21.21 Teachers should react to the banks. Specifically, they should keep a cumulative record of which bank materials they have used. (Upon the introduction of computer management of CRIB Project, this function will be performed automatically.)

SCHOOLS PERSONNEL COMMENTS:

Within the present limits of teacher time.

It must be a very simple non-time consuming task.

To make this function effectively, teachers should have time available for this duty. Teachers are busy people and will not be effective participators if extra concessions are not given them. I also feel each school should have a science leader to act as CRIB leader and program monitor.

This is difficult in light of the teaching assignments some teachers have.

This will take time which the teacher could use in some other fashion. (It may be possible that a lab aid or secretary could perform this function.)

I don't do it but ideally it is a good idea.

This can become too time consuming for a teacher.

. . . might pose a time problem.

(This) is not always practical.

Of what value is this?

CENTRAL OFFICE PERSONNEL COMMENTS:

As long as it is automatic, O.K. But teachers can't be expected to keep such records.

I agree with the first part.

If it doesn't become too onerous a task.

Will require considerable encouragement and monitoring.

This is a lot of work.

21.22 Teachers should react to the banks. Specifically, they should alert the Project Director (or the computer monitor) to any errors, impracticalities or redundancies in the material of the banks.

SCHOOLS PERSONNEL COMMENTS:

If cost time will be given to carry out these tasks.

Through CA's.

It must be a very simple, non-time consuming task.

CENTRAL OFFICE PERSONNEL COMMENTS:

Will require a real effort on the part of (Project) Director and curricular associates to obtain this feedback.

-
- 21.31 Teachers should contribute materials to the bank and so develop their professional competencies. Specifically, they should notify the Project Director of new ideas for CRIB items, either in the form of extensions of or modifications to existing materials, or of completely new subject areas.
-

SCHOOLS PERSONNEL COMMENTS:

They should still be free to build text-books incorporating their ideas and for their own recompense. The School Board does not and should not automatically be entitled to pick its employees' brains.

The most important person to act as a liason between the teachers and Project Director should be the local curricular associate.

A simple mechanism for this must be established.

It depends whether one really views himself as a 'professional' or a technician.

Through CA's.

CENTRAL OFFICE PERSONNEL:

A value judgement. Contributing to (a) bank does not necessarily develop professional competency.

B.S. Good curriculum writers are not necessarily good teachers.

Most teachers are reluctant because they don't know enough about it.

Must be greater involvement of teachers in writing process.

- 21.32 Teachers should contribute materials to the bank and so develop their professional competencies. Specifically, they should be prepared to attend meetings designed to achieve cohesiveness among teachers using CRIB Project materials and to promoteliason between teachers and the rest of CRIB Project organization.
-

SCHOOLS PERSONNEL COMMENTS:

I have a hard time trying to figure out which parts of this statement that I agree with and the parts I disagree with.

Within reason.

On a voluntary basis.

With the practicalities of time, and number of meetings.

Ideally, yes.

With time off.

Is this forced on them or voluntary?

CENTRAL OFFICE PERSONNEL COMMENTS:

Idealistic but necessary.

How much time will be spent at meetings?

Increasing reluctance for teachers to give of their own time without remuneration - summer writers are being paid (so) why shouldn't all teachers who contribute also get paid?

21.33 Teachers should contribute materials to the bank and so develop their professional competencies. Specifically, they should participate during the term and in summer writing sessions where new materials will be prepared by groups of two or three teachers.

SCHOOLS PERSONNEL COMMENTS:

Financial limitations and quality control must be important considerations.

While all teachers could be users of CRIB, I don't feel that all teachers could be CRIB writers - at least not initially!

Only if the teacher is so inclined.

Only on a voluntary basis.

Some caution is advised; in the past it has been more or less the same group that has worked on CRIB. "New blood" and new ideas are a must for CRIB.

On a voluntary basis.

Not to be an additional imposition to classroom responsibilities and current contractual agreement.

Where participation beyond school year is given, appropriate remuneration should be provided. The value of CRIB should be appropriately recognized so that necessary funds are available.

More money needed.

Must be a very good writer and be able to contribute something.

Providing remuneration is available.

This must be left to the teacher's discretion.

Definitely optional.

Remuneration is necessary - as has been provided in the past.

CENTRAL OFFICE PERSONNEL COMMENTS:

Time should be provided for this.

We cannot force this. It is desirable.

In proportion to other curriculum needs.

This process will be limited because of financing difficulties.

On a paid or gratis basis?

21. Teachers - additional role items and comments.

SCHOOLS PERSONNEL COMMENTS:

There is value in such group curriculum development. Is there time, money, interest for this?

Emphasize CRIB during their work with student teachers.

Give maximum exposure to CRIB wherever outsiders are involved, e.g. student teachers, parental visits, etc.

I feel that some form of curriculum development should be compulsory for science teachers.

31.11 The Director of CRIB Project should oversee the operation of the banks by receiving and collating the feedback from the teachers and curricular associates concerning the material in the banks.

SCHOOLS PERSONNEL COMMENTS:

Clerks can receive and collate.
 . . .or assigning it to someone.

31.12 The Director of CRIB Project should oversee the operation of the banks by organizing any meetings of teachers and/or curricular associates during term-time to consolidate teacher response to CRIB Project materials.

SCHOOLS PERSONNEL COMMENTS:

. . .along with supervisor.

CENTRAL OFFICE PERSONNEL COMMENTS:

O.K. for CA's. Might prove impractical for teachers.

31.13 The Director of CRIB Project should oversee the operation of the banks by organizing and operating the out-of-term writing sessions by teachers, curricular associates, curriculum specialists, reading specialists, scientists, and others.

SCHOOLS PERSONNEL COMMENTS:

Must be a full-time job.
 Along with supervisor.
 In consultation with Director of Science.
 In conjunction with Science Supervisor.

CENTRAL OFFICE PERSONNEL COMMENTS:

Receive assistance from Supervisor of Science.

31.14 The Director of CRIB Project should oversee the operation of the banks by deciding in which areas and in which directions CRIB Project materials should be updated, upgraded and expanded.

SCHOOLS PERSONNEL COMMENTS:

In conjunction with Science Supervisor.
 Acting with advice of others.
 Must be based on the teachers' comments in the field.
 I feel both CA's and teachers' suggestions as to the direction of CRIB should be equally as important as that of the Director.
 Along with supervisor.
 In consultation.
 In consultation with his staff.

CENTRAL OFFICE PERSONNEL COMMENTS:

Others would be a part of this decision e.g. the users.
Coordinate such efforts.

This should be decided on a wider basis in the school system.
Decision should not be his own.

- 31.15 The Director of CRIB Project should oversee the operation of the banks by receiving and collating the information from the Instructional Media Centres concerning new developments in audio-visual material availability.
-

SCHOOLS PERSONNEL COMMENTS:

Must look at materials after collation as part of 31.14.
And advise on appropriate requisitions.

Should be responsible for distributing IMC titles back to science teachers in schools.

CENTRAL OFFICE PERSONNEL COMMENTS:

OK as long as CRIB Director visits to schools and teachers are not jeopardized.

- 31.16 The Director of CRIB Project should oversee the operation of the banks by receiving and collating the information from the library services on the new developments in library material availability.
-

SCHOOLS PERSONNEL COMMENTS:

Must look at materials after collation as part of 31.14.

Should be responsible for distributing library titles back to science teachers in schools.

- 31.21 The Director of CRIB Project should encourage the growth of the CRIB Project concept by conducting in-service meetings with teachers in the schools who are either non-users or are not using the banks to their full potential.
-

SCHOOLS PERSONNEL COMMENTS:

The bank is good and tends to sell itself with an awareness - let's not jam it down the throats of the teachers.

A real 'must', with help from the CA's.

In conjunction with Director of Professional Development and Science Curricular Associates.

I see this as a CA's duty.

He would not have the time.

Possibly the curricular associates could also be involved with this role.

In all probability the CA's rapport with the schools in his area would be more effective in accomplishing this objective.

Others may also assist.

If wanted by those teachers.

CENTRAL OFFICE PERSONNEL COMMENTS:

An evaluation of CRIB is needed before this is done.

Only in conjunction with a knowledge of other curriculum involvement of staff. There are other responsibilities than CRIB.

31.22 The Director of CRIB Project should encourage the growth of the CRIB Project concept by meeting with administrators in the schools to explain the purpose and scope of CRIB Project and to solicit support for the activities associated with CRIB Project from school administrators.

SCHOOLS PERSONNEL COMMENTS:

In conjunction with Director of Professional Development and Science Supervisor.

Curricular Associates can handle this role.

Possibly the CA's could also be involved.

Higher level task - principals need dollar guarantees.

I see this as a CA's duty.

This should be CA's role for two reasons: 1. Lack of time for the Director. . . and 2. A local CA should already have established good rapport with the school administrators.

Do administrators put the time required into curriculum matters?

Should have been done before implementation.

CENTRAL OFFICE PERSONNEL COMMENTS:

An evaluation of CRIB is needed before this is done.

31.23 The Director of CRIB Project should encourage the growth of the CRIB Project concept by meeting with administrators in Central Office to explain the purpose and scope of CRIB Project and to solicit support in the promotion of the activities of the Project.

SCHOOLS PERSONNEL COMMENTS:

Done in conjunction with Directors or Assistant Super. - Curriculum.

I see this as being done with the Director of Research.

In cooperation with Supervisor.

This would be the job of both the Supervisor of Science and Health and the (Project) Director.

This should be a joint venture with the Supervisor of Science.

Must also work with Science Supervisor and some of the curriculum directors to gain more support.

Should have been done before implementation.

CENTRAL OFFICE PERSONNEL COMMENTS:

With the supervisor of science.

An evaluation of CRIB is needed before this is done.

With the Supervisor of Science.

-
- 31.24 The Director of CRIB Project should encourage the growth of the CRIB Project concept by attending, when invited, professional development sessions in other school systems who wish to understand the CRIB Project concept.
-

SCHOOLS PERSONNEL COMMENTS:

Important, but of secondary priority.
 Plenty of work to be done in our own system!
 In cooperation with CA's.
 Depending on number of requests as to attendance at each of the meetings.
 Depends on the defined goals of the Project.

CENTRAL OFFICE PERSONNEL COMMENTS:

An evaluation of CRIB is needed before this is done.
 Only if it does not interfere with his fulfilling his responsibility to the system.

- 31.25 The Director of CRIB Project should encourage the growth of the CRIB Project concept by attending to the publication in learned journals and other suitable places of appropriate aspects of CRIB Project.
-

SCHOOLS PERSONNEL COMMENTS:

Low priority role.
 Only if there is potential for enlargement of the Project outside the framework of EPSB.
 Along with supervisor.
 With help of Science Supervisor.

CENTRAL OFFICE PERSONNEL COMMENTS:

An evaluation of CRIB is needed before this is done.
 With U of A staff or have U of A staff such as Dr. Nay do this.
 Share this responsibility with his colleagues.

- 31.3 The Director of CRIB Project should establish lines of communication with the appropriate authority in Central Office to whom CRIB Project is accountable so that Central Office decision-making shall be expedited.
-

SCHOOLS PERSONNEL COMMENTS:

Much of this will help if the Supervisor of Science and Health (has) taken a major role.
 And supervisor of science.

CENTRAL OFFICE PERSONNEL COMMENTS:

Primarily (the) responsibility of Supervisor of Science.

31.41 The Director of CRIB Project shall be aided in the discharge of the above-mentioned duties by being sufficiently free of other duties to enable him or her to devote enough time to CRIB Project.

SCHOOLS PERSONNEL COMMENTS:

Must not lose complete sight of the classroom and its realities.

The Director should continue some teaching in order to maintain contact with the classroom.

Most emphatically - this involves a hell of a lot of time and responsibility.

How much is "sufficient"?

But not completely out of touch with the classroom.

Having a teaching contact is very important.

CENTRAL OFFICE PERSONNEL COMMENTS:

Yes, in its development stages - then only if it is any good.

31.42 The Director of CRIB Project shall be aided in the discharge of the above-mentioned duties by being aided by sufficient secretarial and other specialized help.

CENTRAL OFFICE PERSONNEL COMMENTS:

Yes, in its development stages - then only if it is any good.

31.43 The Director of CRIB Project shall be aided in the discharge of the above-mentioned duties by having adequate numbers of subordinates who will have duties with CRIB Project to a sufficient proportion of their total workload.

SCHOOLS PERSONNEL COMMENTS:

Must involve as much of the people at the 'grassroots' otherwise CRIB will end belonging to them.

CENTRAL OFFICE PERSONNEL COMMENTS:

To the extent possible.

Like which (subordinates)?

Subordinates should be practicing teachers.

31.44 The Director of CRIB Project shall be aided in the discharge of the above-mentioned duties by being able to employ the curricular associates in science education as his workers in the field.

SCHOOLS PERSONNEL COMMENTS:

Curricular Associates should have sufficient time off to carry out these duties.

Part of the assigned 0.3 time ONLY.

As long as extra time (non-teaching) is assigned for these

specific duties. The CA rarely has time to fulfil his obligations to his own satisfaction - let alone fulfil obligations to the Director.

These people must have the time.

CA's (are) to serve science needs of the system and not needs of CRIB.

But not taking up all their time.

CENTRAL OFFICE PERSONNEL COMMENTS:

To the extent possible.

CA's are overloaded already.

31. The Director of CRIB Project - additional role items and comments.
-

SCHOOLS PERSONNEL COMMENTS:

Identify lighthouse schools where CRIB materials are expertly used. Have close liaison with Director of Evaluation, Data Processing, Information Systems.

(Be) committed and remain as Director for at least two years and be available for assistance in the third.

(Make) periodic personal visits to classrooms where CRIB is being used.

CENTRAL OFFICE PERSONNEL COMMENTS:

This position will never be created with our budget. Why a Director? Why not a consultant or specialist? . . . I don't believe that such a position is possible, neither is it warranted. . . CRIB has some useful applications to many (not all) science teachers and some (not all) interest to curriculum developers. To set it in a category by itself, as this questionnaire seeks, is unrealistic in terms of a large school system.

Provide substantial inservice training should the system become computerized.

(The position of Director of CRIB Project) is unnecessary and the functions listed should be handled by the subject supervisor.

- 32.11 Curricular Associates should serve as advisors and trouble-shooters in the operation of CRIB Project and CRIB materials. They should be adept in using the banks and be aware of their versatility.
-

NO COMMENTS

- 32.12 Curricular Associates should serve as advisors and trouble-shooters in the operation of CRIB Project and CRIB materials. They should assist teachers having difficulty with either the physical or conceptual aspects of bank operation.
-

NO COMMENTS

32.13 Curricular Associates should serve as advisors and trouble-shooters in the operation of CRIB Project and CRIB materials. They should participate in term-time meetings of teachers for the purpose of promoting efficiencies in bank use.

NO COMMENTS

32.14 Curricular Associates should serve as advisors and trouble-shooters in the operation of CRIB Project and CRIB materials. They should participate in out-of-term writing sessions.

SCHOOLS PERSONNEL COMMENTS:

On voluntary basis only.

Optional.

Some people are writers, others are not!

Time and circumstances permitting.

May not be practitioners or may wish time off. I feel it most important to use classroom teachers.

Providing there is remuneration.

But with pay.

CENTRAL OFFICE PERSONNEL COMMENTS:

Paid or gratis?

E.g. summer writing - with pay!

If funds are available.

Whenever they can.

32.21 Curricular Associates should be a liason between the Project Director and the teachers. They should act as a channel to the Director for teacher suggestions and ideas.

SCHOOLS PERSONNEL COMMENTS:

But should not act as a barrier. The Director (of CRIB Project) should be available to teachers at all times.

Sometimes ideas get "lost". (There) should be a "file" for the collection of ideas and listing of persons with innovations for CRIB.

32.22 Curricular Associates should be a liason between the Project Director and the teachers. They should notify the Director of any difficulties which they encounter among teachers.

SCHOOLS PERSONNEL COMMENTS:

Teachers must maintain their independence and be able to use CRIB as a source of information.

32. Curricular Associates - additional role items and comments.

SCHOOLS PERSONNEL COMMENTS:

CA's role in evaluating CRIB should be emphasized.

Hold inservices with his schools to assist teachers in using CRIB to develop their program of studies.

Sell the idea of CRIB to new and other teachers that are opposed to the idea of CRIB.

CA's should play a vital role in the field testing of new materials in his school or in classrooms in his area prior to their being made a finalized product of CRIB.

Joint development of units of CRIB materials by groups of teachers in CA's zones would have many benefits - for experienced, and particularly, new teachers.

APPENDIX 3

Revised Role Items

Note: Items marked with an asterisk (*) are those which occurred to the revisers during the Stage III Revision. They did not form part of the Stage IV questionnaires. They are included so that they may be of assistance in any further assessment of the level of implementation of CRIB Project role items.

1. Associate Superintendent - Curriculum

The holder of this position should:

1.1 Define broad curriculum policy within which the position of the CRIB concept is delineated.

*1.2 Define policy on obtaining and allocation of funding for research and development of projects of CRIB type.

1.3 Define policy on the opening of lines of communication to his counterparts in other school systems and the Department of Education. (1.3)

1.4 Ensure that implementation is real, rather than superficial.

2. Assistant Superintendent Curricular Services

The holder of this position should:

2.1 Coordinate the work of his Directors on CRIB Project. (2.1)

2.2 Strongly support CRIB Project applications for a reasonable share of financial and logistic support. (2.2)

2.3 Open the requisite lines of communication within EPSB System so that the multitude of linkages of CRIB Project can operate efficiently. (2.3)

*2.4 Open lines of communication in accordance with the policy of the Associate Superintendent - Curriculum, to his counterparts in other school systems and the Department of Education regarding curricular developments such as CRIB Project.

3. Assistant Superintendent of Research and Evaluation

The holder of this position should:

3.1 Have a general picture of how CRIB Project operates. (3.1)

3.2 Facilitate through his directors the monitoring of the progress of CRIB Project as to its efficiency. (3.2)

3.3 Allocate a priority level for CRIB-type projects.

4. Director of Curriculum Development

The holder of this position should:

- 4.1 Strongly support CRIB Project applications for a reasonable share of financial and logistic support. (4.1)
- 4.2 Open and maintain the requisite lines of communication to the higher and lower levels of the EPSB hierarchy so that the multitude of linkages of CRIB Project can operate efficiently. (4.2)
- 4.3 Monitor the general well-being of CRIB Project. (4.3)
- 4.4 Take the requisite steps to ensure that the objectives of CRIB Project are continually under review in light of current curriculum development policy. (4.4)
- 4.5 Ensure that the changing objectives of CRIB Project are implemented. (4.5)
- 4.6 Implement CRIB concept according to the overall policy of curriculum development in those subject areas and grade levels where it is applicable or is requested on an experimental basis. (4.8)
- 4.7 Cooperate with other Directors to coordinate on-going efforts to increase the value of CRIB Project. (4.6)

5. Director of Curriculum Supervision

The holder of this position should:

- 5.1 Cooperate with other Directors and Supervisors to coordinate evaluation strategies on the impact of CRIB Project.
- 5.2 Take requisite steps to ensure that the objectives of the Project are being followed.
- 5.3 In conjunction with Director of Evaluation, Director of Pupil Assessment, Director of Research and Supervisor of Science and Health, conduct the continued assessment of the impact of CRIB Project on student learning. (8.3)

6. Director of Professional Development

The holder of this position should:

- 6.1 Facilitate the in-service sessions which are necessary to CRIB Project.
- 6.2 Encourage the Project Director in utilizing the CRIB Project as an avenue of professional development activity. (6.2)
- 6.3 Facilitate the participation of curricular associates and teachers in the writing of materials for CRIB Project as an avenue of their professional development activity. (6.1)
- 6.4 Cooperate with other Directors to coordinate on-going efforts to increase the value of CRIB Project to its users.
- *6.5 Assist in the assessment of the effect of CRIB Project on the professional development of science teachers.

7. Director of Research

The holder of this position should:

7.1 Strongly support CRIB Project applications for a reasonable share of financial and logistic support. (7.1)

7.2 Apply for external funding for the Project if that is desired.

7.3 In conjunction with other administrators (e.g. science supervisor) open lines of communication to his counterparts in other school systems with a view to the ultimate coordination of banks similar to those of CRIB Project which might be developed in these systems. (7.2)

7.4 Be alert for opportunities to extent a fully developed and evaluated CRIB concept into other suitable areas and grade levels. (7.3)

7.5 In conjunction with other Directors, ensure that Project evaluation on the impact of CRIB Project occurs.

7.6 Assist in the development and conducting of the evaluation design for the Project.

7.7 Ensure that the Project evaluation results are reported to system personnel and personnel in other school systems.

7.8 Ensure that adequate Project management and control is carried out by CRIB Project Director as long as CRIB Project receives research funding.

7.9 Maintain awareness of the operation and impact of CRIB Project at the classroom level.

8. Director of Evaluation

The holder of this position should:

8.1 Collaborate with the Project Director to collect and collate data from principals, curricular associates, users of CRIB Project, and any other sources deemed necessary so that a current and comprehensive picture of CRIB Project is available. (8.1)

8.2 In conjunction with the Project Director, monitor the concurrence of the implementation model of CRIB Project with what is actually taking place so that corrections may be made in either the model or the working of the Project. (8.2)

8.3 Initiate, and in conjunction with the Directors of Pupil Assessment, Curriculum Supervision, and Research, and the Supervisor of Science and Health, conduct the continued assessment of the impact of CRIB Project on student learning. (8.3)

8.4 Assist in the development and conducting of the evaluation design for the Project.

8.5 Assist in the assessment of the effect of CRIB Project on the professional development of science teachers.

8.6 Make available results of evaluation studies of CRIB Project to system personnel and personnel in other school systems.

9. Director of Educational Data Processing

This position no longer exists. The role items have been reassigned wherever possible.

10. Directorate of Information Systems

The staff of Information Systems should:

10.1 Understand the necessity of ultimately transferring the materials in and the management of the banks to a computer facility. (10.1)

10.2 Be aware of the future curricular needs of the schools such as those posed by CRIB Project when a computer network with terminals in the schools is being designed. (10.2)

10.3 Prepare, in conjunction with the Director of CRIB Project and the Directors of Student Accounting and School Information, etc., the specifications of a computer system which would be sufficiently flexible to handle CRIB Project management over and above other projected needs of EPSB system. (10.4)

10.4 Prepare an estimate of the initial cost of transferring CRIB Project materials to a computer system and the subsequent costs of maintaining them. (10.5)

10.5 Assist in the development of the computer assisted instruction (C.A.I.) potential of the CRIB materials. (10.6)

10.6 Maintain and make available on request computerized information concerning the extent of use of items in the bank. (10.7)

10.7 Collaborate with other Directors and Supervisors to facilitate the evaluation of CRIB Project. (10.8)

11. Director of Pupil Assessment

11.1 Assess, in conjunction with the other Directors and Supervisors, the progress of junior high school students in their learning of science. (11.1)

11.2 Cooperate in the design and implementation of a study to assess the contribution of CRIB Project to this student progress. (11.2)

11.3 Be directly and continuously involved in development and modification of assessment materials in CRIB Project banks.

12. Supervisor of Science and Health

12.1 Function as a mediator between other facilitators and the Director of CRIB Project and staff. (12.1)

12.2 Be a source of ideas and new directions for CRIB Project. (12.2)

12.3 Undertake the integration of CRIB Project with other science programs operating in the system. (12.3)

12.4 Bring to the attention of the Project staff new science materials. (12.4)

12.5 Cooperate with the Director of Research and the Director of CRIB Project in contacting other systems for the initiation of CRIB-type projects in science on a consortium basis. (12.5)

12.6 Ensure, through the Project Director, that the objectives of the Project and materials in the banks are continually revised and expanded. (12.6)

12.7 Prepare in conjunction with Director of CRIB Project budgets for the Project.

*12.8 Collaborate with the Director of Evaluation, other Directors and the Director of CRIB Project to facilitate the evaluation of the Project.

12.9 Exercise his responsibilities to ensure the appointment of high-calibre personnel to the Project. (4.7)

12.10 In conjunction with the Director of Evaluation conduct the continued assessment of the impact of CRIB Project on student learning. (8.3)

12.11 Encourage the curricular associates and the consultants to promote among teachers increasing and more efficient use of the banks. (5.1)

12.12 Organize in conjunction with the Project Director meetings of teachers and curricular associates during the school year to exchange ideas on the use of the banks and promote liason between teachers and the rest of CRIB Project staff.

13. Personnel in the Instructional Media Centre

The Centre should:

13.1 Be aware of the materials which are used in the audio-visual sub-banks of the Project. (13.1)

13.2 Be aware of the kinds of A-V material that are especially pertinent to the needs of CRIB Project. (13.2)

13.3 Inform the Project Director of additions of such material to the catalogues of the centre. (13.3)

13.4 Inform the Project Director of new releases of materials suitable for CRIB Project that could be obtained for the centre. (13.4)

13.5 Inform the Project Director if any materials which are referenced in the banks become unavailable. (13.5)

13.6 Cooperate with the Directorate of Information Systems and other Directors to ensure that the computerized information of the Centre and the computer-managed operations of CRIB Project are compatible. (13.6)

14. Personnel in the EPSB Library System

The library services should:

14.1 Be aware of the materials in their catalogues which are mentioned in the CRIB Project banks. (14.1)

14.2 Be aware of the kinds of library materials which are especially pertinent to the needs of CRIB Project. (14.2)

14.3 Inform the Project Director of additions of such materials to the catalogues of the services. (14.3)

14.4 Inform the Project Director of information on new releases of materials suitable for CRIB Project that could be obtained for the libraries. (14.4)

14.5 Inform the Project Director if any materials which are referenced in the bank items become unavailable or

superseded by later editions. (14.5)

14.6 Work with the Directorate of Information Systems and other Directors to ensure that the computerized information of the libraries and the computer-managed operations of CRIB Project are compatible. (14.6)

14.7 Cooperate with the Supervisor of Science and Health, Director of CRIB Project, curricular associates and science teachers to ensure that the reference materials mentioned in the banks are available in central and school libraries. (14.7)

14.8 Cooperate at the school level in the development of new materials for the banks.

15. Specialists in Reading, Language and Mathematics

The specialists should:

15.1 Cooperate with CRIB Project staff to ensure that CRIB materials are of the appropriate level for their intended use. (15.1)

15.2 Cooperate with CRIB Project staff in conducting in-service sessions for CRIB writers to ensure that the materials they produce are of the appropriate level for their intended use. (15.2)

16. The Administrative Staff of the Schools

The administrative staff of the schools (principals, vice-principals and science department heads) should:

16.1 Be aware of the existence of CRIB Project. (16.1)

- 16.2 Be sufficiently familiar with the rationale of the Project to understand how it resembles and differs from other curricular innovations. (16.2)
- 16.3 Understand that use of CRIB Project materials by a teacher can lead to a more efficient and productive use of the teacher's time. (16.3)
- 16.4 Understand that the rationale of the Project encourages teachers to participate in group writing sessions to enrich their professional abilities and attitudes. (16.4)
- 16.5 Be aware that participation in the group activities of the Project may require release time for the teachers concerned. (16.5)
- 16.6 Cooperate in the provision of release time for teachers who require it for participation in group writing sessions. (16.6)
- 16.7 Influence the adoption of innovations such as CRIB Project by the teachers in their schools. (16.7)
- 16.8 Bring CRIB Project to the attention of their science teachers.
- 16.9 Encourage, in cooperation with the Project staff, non-users of CRIB Project banks to consider becoming users and full participants in the Project. (16.8)
- *16.10 Facilitate the purchase of audiovisual and library support materials and the provision of adequate science facilities to be used in conjunction with CRIB Project.

21. The Teachers

The teachers should:

21.1 Make use of the banks. Specifically, they should:

21.1.1 Draw upon bank materials to help in the teaching and evaluation of their courses. (21.1.1)

21.1.2 Use the banks as a source of enrichment material for individual students who have that need. (21.1.2)

*21.1.3 Endeavour to obtain for the school the audio-visual and library resources and science facilities required for use with the bank materials.

21.2 Provide feedback on the banks. Specifically, they should:

21.2.1 Keep and make available to the Project Director a cumulative record of which bank materials they have used. (Upon the introduction of computer management of CRIB Project, this function will be performed automatically.) (21.2.1)

21.2.2 Alert the Project Director (or the computer monitor) to any errors, omissions, impracticalities or redundancies in the materials of the banks. (21.2.2)

21.2.3 Attend meetings designed to exchange ideas on the use of the banks and to promote liason between teachers and the rest of CRIB Project staff. (21.3.2)

21.3 Contribute materials to the bank. Specifically, they should:

21.3.1 Notify the Project Director of new ideas for CRIB items, either in the form of extensions or of modifications to existing materials, or of completely

new content areas. (21.3.1)

21.3.2 Participate during the term and in summer writing sessions where new materials for the banks will be prepared by groups of science teachers. (21.3.3)

21.4 Make CRIB Project known to "outsiders" (e.g. parents, student teachers, etc.).

31. Director of CRIB Project

The Director should:

31.1 Administer the operation of the Project by

31.1.1 Having an accurate and detailed picture of how CRIB Project operates. (3.1)

31.1.2 Establishing lines of communication with the appropriate authority in Central Office to whom CRIB Project is accountable so that Central Office decision-making shall be expedited. (31.3)

31.1.3 Cooperating with the Directorate of Information Systems and others in the preparation of the specifications of a computer system which would be sufficiently flexible to handle CRIB Project management over and above the other projected needs of EPSB system. (10.4)

31.1.4 Initiating and coordinating periodic reviews of the objectives and rationale of CRIB Project. (12.6)

*31.1.5 Preparing, in conjunction with Supervisor of Science and Health and the Project staff, budgets for the Project.

*31.1.6 Providing and maintaining the banks in the schools.

31.2 Promote the wider and more effective use of the banks by

31.2.1 Conducting in conjunction with other Project staff in-service meetings with teachers in the schools who are non-users. (31.2.1)

31.2.2 Organizing in conjunction with the Supervisor of Science and Health meetings of teachers and curricular associates during the school year to exchange ideas on the use of the banks and promote liason between teachers and the rest of CRIB Project staff. (31.1.2)

31.2.3 Soliciting the support of school administrators for the activities associated with CRIB Project. (31.2.2)

31.3 Direct the revision and amplification of the banks by

31.3.1 Receiving and supervising the collation of the feedback from the teachers and curricular associates concerning the material in the banks. (31.1.1)

31.3.2 Receiving, collating and ensuring the incorporation of applicable information from the Instructional Media Centres concerning new developments in audio-visual material availability. (31.1.5)

31.3.3 Receiving, collating and ensuring the incorporation of applicable information from the library services on the new developments in library material availability. (31.1.6)

31.3.4 Deciding, in consultation with Project staff and users, in which areas and in which directions CRIB Project materials should be updated, upgraded and expanded. (31.1.4)

31.3.5 Organizing and operating the writing sessions which take place out of school hours by teachers, curricular associates, curriculum specialists, reading specialists, scientists and others. (31.1.3)

31.3.6 Continually revise and expand the objectives of the Project and the materials in the banks. (12.6)

31.4 Communicate the nature and operation of CRIB Project by

31.4.1 Meeting with administrators in the schools to explain the current purpose and scope of CRIB Project. (31.2.3)

31.4.2 Informing library services and Instructional Media Centres of any new resource requirements of CRIB Project.

31.4.3 Working with the Supervisor of Science and Health to explain the purpose and scope of CRIB Project to administrators in Central Office and to solicit their support in the promotion of the activities of the Project. (31.2.3)

31.4.4 Attending, when invited, professional development sessions in other school systems to talk about CRIB Project. (31.2.4)

*31.4.5 Preparing and making available periodic reports on the status of the Project.

31.4.6 Attending to the publication in learned journals and other suitable places of appropriate aspects of CRIB Project. (31.2.5)

- 31.5 Contribute towards the evaluation of CRIB Project by
- 31.5.1 Making periodic visits to the classroom to study CRIB Project in action.
 - 31.5.2 Assisting the Director of Evaluation to monitor the concurrence of the implementation model of CRIB Project with what is actually taking place so that corrections may be made in either the model or the working of the Project. (8.2)
 - 31.5.3 Assisting the Director of Evaluation in the assessment of the effect of CRIB Project on the professional development of science teachers.

32. Curricular Associates in Science

Curricular associates in science should:

- 32.1 Serve as advisors and trouble-shooters in the operation of CRIB Project by
 - 32.1.1 Being adept in using the banks and being aware of their versatility. (32.1.1)
 - 32.1.2 Assisting teachers having difficulty with either the physical or conceptual aspects of the bank operation. (32.1.2)
 - 32.1.3 Participating in meetings during the school year of teachers for the purpose of promoting more effective use of the banks. (32.1.2)
 - *32.1.4 Encouraging teachers to obtain library and audio-visual resources and science facilities which can be used in conjunction with bank materials.

32.2 Serve as liason between the Project Director and the
the teachers by

32.2.1 Acting as a channel to the Director for teacher
suggestions and ideas. (32.2.1)

32.2.2 Notifying the Director of any difficulties
which they encounter among teachers. (32.2.2)

32.3 Participate in the revision and expansion of the banks by

32.3.1 Participating in writing sessions outside school
hours (32.1.4)

32.3.2 Field testing new bank materials.

32.3.3 Cooperating in the evaluation of CRIB materials
and their effectiveness on student learning.

APPENDIX 4

Questionnaires employed in Stage IV Assessment of Role

Item Implementation

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EDMONTON PUBLIC SCHOOL BOARD

DEPARTMENT OF RESEARCH & EVALUATION

April 28, 1976

MEMORANDUM:

TO: RESPONDENT

FROM: Dr. Tom Blowers, Director of Research
Mr. Dave Thomas, Supervisor of Health & Science

SUBJECT: CURRICULUM RESOURCES INFORMATION BANK (CRIB)

CC: Dr. M. A. Nay, Mr. A. G. Ryan

Once again we are asking for your cooperation and assistance in the above study by completing the attached questionnaire. We very strongly support the research being conducted on CRIB by Dr. M. A. Nay and Mr. A. G. Ryan because of its direct application and usefulness in connection with the CRIB Program which is operating in all Edmonton Public junior high schools.

Would you please return your completed questionnaire to Emily LaRose, Department of Research & Evaluation by May 14, 1976.

The anonymity of all respondents will be preserved in that completed questionnaires will not be examined at Central Office but will be collected and forwarded to Mr. A. G. Ryan at the University for analysis.

We are attaching a letter from Dr. M. A. Nay and Mr. A. G. Ryan elaborating on the task you are asked to perform. Should you have any questions concerning the questionnaire, please telephone Mr. A. G. Ryan at 432-5716 (office) or 474-7564 (home).



TAB/GDT/el

Attachments

FACULTY OF EDUCATION
DEPARTMENT OF SECONDARY EDUCATION
TELEPHONE (403) 432-3674



THE UNIVERSITY OF ALBERTA
EDMONTON, CANADA T6G 2G5

May 6th, 1976

Dear Respondent,

Yes! This is another questionnaire! We know how pressed for time you are at this stage of the school year and we wouldn't impose on you except that your response is vital to the success of our project and to the continued progress of an important curriculum project in the EPSB system.

As you may be aware, we are currently carrying out a study in the Edmonton Public School Board system entitled: "The Development of a Model to Assist in the Further Implementation of the Curriculum Resources Information Bank (CRIB) Project." We have reached the stage where we have established a series of validated role descriptions for all personnel directly or indirectly associated with CRIB Project. These roles are a portrayal of how people in EPSB system would be performing if CRIB Project were fully implemented according to its stated objectives. (A copy of these objectives is appended to the questionnaire.) As you well know, CRIB Project has not fully reached all its objectives.

A role description has been developed for your present position with EPSB and we are now asking your help in assessing the difference between the description of the role you would be playing in a fully-implemented CRIB Project and the part that you are actually playing in the Project at the present time. Obviously, there will be differences - in some roles, these will be extensive. The enclosed questionnaire (which is very short) consists of a list of role items which pertain to your position and we request that you respond in the following three ways:

- I. Rate each role item as to the level of attention you are now giving or have previously given it on a scale from "high" (through "medium" and "low") to "not at all". For example, if one of your role descriptions called on you to file monthly reports on CRIB Project, and you had filed one for the last two months but not this month, you would mark "high" or "medium".
- II. Rank the roles according to their relative importance for your position in a fully-implemented CRIB Project (i.e. in a CRIB Project where all the objectives listed in the Appendix have been attained). Rank all the roles, even those which you rated as "not at all" in Response I. Response II refers to an idealized, fully-implemented CRIB Project. Please note that the order which this ranking produces need bear no resemblance to your ratings in Response I. Response II is a different task.
- III. Free Response (a) Comment on the validity (or appropriateness) of the role description by suggesting any changes or additions that should be made to the items.

- 2 -

(b) Comment on the conditions (physical, monetary, time, etc.) that are necessary for the attainment of your role items and which are at present available to you.

(c) Comment on the conditions (physical, monetary, time, etc.) that are, or would be, necessary for the attainment of your role items but which are at present not available to you.

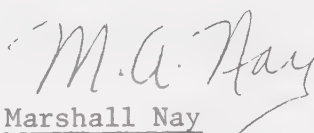
When you have finished, please return the questionnaire to Emily LaRose, Department of Research and Evaluation, by the deadline specified on the cover letter from Dr. Tom Blowers. A self-addressed envelope is provided. Be assured that all information will be treated with the utmost confidentiality. In any report of this study, no individual will be identified, nor will sufficient information be given to render such identification possible.

We are most grateful for your cooperation in our study. Should you require more background information on CRIB Project than is provided in the Appendix, or on this questionnaire, please ring Alan Ryan at 432-5716 (office) or 474-7564 (home).

Yours sincerely,



Alan Ryan



Marshall Nay



May 20th, 1976

Dear Respondent,

We have not yet received your response to our questionnaire which we mailed to you earlier this month. If you have been too busy to complete the form, may we ask that you try to finish it in the next two or three days; if the questionnaire has been misplaced or it never reached you, we are enclosing another copy with this letter. Of course, if you have already sent in your completed response, please ignore this letter.

Here are some details of our study. We are currently carrying out a study in the Edmonton Public School Board system entitled: "The Development of a Model to Assist in the Further Implementation of the Curriculum Resources Information Bank (CRIB) Project". We have reached the stage where we have established a series of validated role descriptions for all personnel directly or indirectly associated with CRIB Project. These roles are a portrayal of how people in EPSB system would be performing if CRIB Project were fully implemented according to its stated objectives. (A copy of these objectives is appended to the questionnaire.) As you well know, CRIB Project has not fully reached all its objectives.

A role description has been developed for your present position with EPSB and we are now asking your help in assessing the difference between the description of the role you would be playing in a fully-implemented CRIB Project and the part that you are actually playing in the Project at the present time. Obviously, there will be differences - in some roles, these will be extensive. The enclosed questionnaire (which is very short) consists of a list of role items which pertain to your position and we request that you respond in the following three ways:

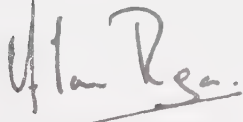
- I. Rate each role item as to the level of attention you are now giving or have previously given it on a scale from "high" (through "medium" and "low") to "not at all". For example, if one of your role descriptions called on you to file monthly reports on CRIB Project, and you had filed one for the last two months but not this month, you would mark "high" or "medium".
- II. Rank the roles according to their relative importance for your position in a fully-implemented CRIB Project (i.e. in a CRIB Project where all the objectives listed in the Appendix have been attained). Rank all the roles, even those which you rated as "not at all" in Response I. Response II refers to an idealized, fully-implemented CRIB Project. Please note that the order which this ranking produces need bear no resemblance to your ratings in Response I. Response II is a different task.
- III. Free Response (a) Comment on the validity or appropriateness of the role description by suggesting any changes or additions that should be made to the items.

- (b) Comment on the conditions (physical, monetary, time etc) that are necessary for the attainment of your role items and which are at present available to you.
- (c) Comment on the conditions (physical, monetary, time etc.) that are, or would be, necessary for the attainment of your role items but which are at present not available to you.

When you have finished, please return the questionnaire as soon as possible to Emily LaRose, Department of Research and Evaluation. A self-addressed envelope is provided. Be assured that all information will be treated with the utmost confidentiality. In any report of this study, no individual will be identified, nor will sufficient information be given to render such identification possible.

We are most grateful for your cooperation in our study. Should you require more background information on CRIB Project than is provided in the Appendix, or on this questionnaire, please ring Alan Ryan at 432-5716 (office) or 474-7564 (home).

Yours sincerely,


Alan Ryan


Marshall Nay

APPENDIXThe Objectives of CRIB Project*

1. To apply information storage, retrieval and dissemination techniques to curriculum, instruction and evaluation in science teaching.
2. To make information available to teachers on as many alternatives as possible in curriculum, instructional materials and methods, and evaluation.
3. To determine the dynamics and evolution of a data bank operation from which a prototype can be developed for other subject areas.
4. To enable a greater diversification of curriculum in junior high school science.
5. To enhance individualization of instruction on the basis of the extensive alternatives suggested in the information bank with respect to learning modes and student abilities.
6. To increase the professional involvement of teachers in curriculum change by providing them with a vehicle for sharing ideas, and engaging in other cooperative efforts.
7. To enhance the teacher's opportunities for continuous instructional improvement in science.
8. To increase the professional involvement of teachers in the curriculum change process on the basis of the many alternative topics, activities, materials, etc., in the information banks.
9. To provide an important vehicle for continuous professional development of teachers by:
 - a) presenting materials enabling them to develop programs,
 - b) involving teachers in the building and revising of the banks,
 - c) providing the opportunity for teachers to evaluate the operation and contents of the banks,
 - d) sharing ideas, materials and engaging in cooperative efforts.

* The wording of the objectives for CRIB Project has changed slightly over the years. This list has been compiled from the various proposals for funding.

Brief History of CRIB Project

The Curriculum Resources Information Bank Project was begun in 1969 for junior high school science as a cooperative venture of teachers of EPSB and members of the Department of Secondary Education, University of Alberta. Its major purpose is to provide teachers of science with ready access to a great variety of teaching resources or information about them, and as a consequence to bring about continual rational change in the science curriculum. The first bank to be developed was the Grade 9 Physical Science Bank. Over a period of

- 2 -

years previously, Edmonton science teachers had gained considerable experience with a large number of new courses and many of these teachers were also active in developing their own courses. It was important that the results of these individual efforts be collated, shared and expanded. The vehicle for this sharing is a Keysort card bank in which curriculum information is collated and organized by science teachers into five sub-banks covering Content Detail (CD), Lesson Plan Teacher Part (LP-T), Lesson Plan Student Part (LP-S), Audio-Visual Aids (AV) and Problems and Test Items (PT). There is also a summarizing Master Card sub-bank (MC). The structure is open-ended to permit addition and revision of information and a code is incorporated to facilitate the storage and retrieval of information.

Originally ten data banks were prepared, field tested for one year, evaluated on the basis of the test and placed back in the schools for further use. Gradually the Project developed to the stage where every school which was teaching Grade 9 Science in EPSB system has had a bank made available to them. Subsequently the biological sciences bank for Grade 7 and the earth science bank for Grade 8 were placed in every junior high school.

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Associate Superintendent - Curriculum:

	High	Medium	Low	Not at All
I have been and/or am:				
1. Defining policy on the opening of lines of communication to my counterparts in other school systems and the Department of Education	_____	_____	_____	_____
2. Ensuring that the implementation of CRIB Project is real, rather than superficial	_____	_____	_____	_____
3. Defining broad curriculum policy within which the position of the CRIB concept is delineated	_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

LOWEST

- III. Free Response:

- Validity (or appropriateness) of your role items as expressed above:
- Conditions required which are presently available and are necessary for role attainment:
- Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

344.

- I. Rate with a check (✓) the level of attention given by you to the following role items for Assistant Superintendent, Curricular Services:

<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not at all</u>
-------------	---------------	------------	---------------------------

I have been and/or am:

1. Opening the requisite lines of communication within EPSB system so that the multitude of linkages of CRIB Project can operate efficiently

_____	_____	_____	_____
-------	-------	-------	-------

2. Strongly supporting CRIB applications for a reasonable share of financial and logistic support

_____	_____	_____	_____
-------	-------	-------	-------

3. Coordinating the work of my Directors on the CRIB Project

_____	_____	_____	_____
-------	-------	-------	-------

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

LOWEST

- III. Free Response:

a. Validity (or appropriateness) of your role items as expressed above:

b. Conditions required which are presently available and are necessary for role attainment:

c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Assistant Superintendent of Research and Evaluation:

High	Medium	Low	Not At All
------	--------	-----	------------------

I have been and/or am:

1. Having a general picture of how CRIB Project operates
2. Facilitating through my Directors the monitoring of the progress of CRIB Project as to its efficacy
3. Allocating a priority level for CRIB type projects

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

LOWEST

- III. Free Response:

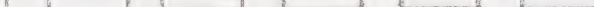
- a. Validity (or appropriateness) of your role items as expressed above:
- b. Conditions required which are presently available and are necessary for role attainment:
- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

	High	Medium	Low	Not At All
1. The country has a high level of economic development.				
2. The country has a high level of political development.				
3. The country has a high level of social development.				
4. The country has a high level of cultural development.				
5. The country has a high level of technological development.				
6. The country has a high level of environmental development.				
7. The country has a high level of health development.				
8. The country has a high level of education development.				
9. The country has a high level of infrastructure development.				
10. The country has a high level of governance development.				
11. The country has a high level of justice development.				
12. The country has a high level of equality development.				
13. The country has a high level of freedom development.				
14. The country has a high level of security development.				
15. The country has a high level of stability development.				
16. The country has a high level of peace development.				
17. The country has a high level of prosperity development.				
18. The country has a high level of happiness development.				
19. The country has a high level of well-being development.				
20. The country has a high level of quality of life development.				

1. Taking the requisite steps to ensure that the objectives of CRIB Project are continually under review in light of current curriculum development policy	_____	_____	_____	_____
2. Opening and maintaining the requisite lines of communication to the higher and lower levels of the EPSB System hierarchy so that the multitude of linkages of CRIB Project can operate efficiently.	_____	_____	_____	_____
3. Strongly supporting CRIB Project applications for a reasonable share of financial and logistic support	_____	_____	_____	_____
4. Ensuring that any changes in the objectives of CRIB Project are implemented	_____	_____	_____	_____
5. Implementing CRIB concept according to the overall policy of curriculum development in those subject areas and grade levels where it is applicable or is requested on an experimental basis.	_____	_____	_____	_____
6. Monitoring the general well-being of CRIB Project	_____	_____	_____	_____
7. Cooperating with other Directors to coordinate on-going efforts to increase the value of CRIB Project	_____	_____	_____	_____

HIGHEST



LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Director of Program Supervision:

	High	Medium	Low	Not At All
I have been and/or am:				
1. Taking requisite steps to ensure that the objectives of the Project are being followed	_____	_____	_____	_____
2. In conjunction with Director of Evaluation, Director of Pupil Assessment, Director of Research and Supervisor of Science and Health conducting the continued assessment of the impact of CRIB Project on student learning	_____	_____	_____	_____
3. Cooperating with other Directors and Supervisors to coordinate evaluation strategies on the impact of CRIB Project	_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

LOWEST

- III. Free Response:

- Validity (or appropriateness):
- Conditions required which are presently available and are necessary for role attainment:
- Conditions required which are presently not available that would be necessary for role attainment:

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Director of Professional Development:

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
I have been and/or am:				
1. Facilitating the participation of curricular associates and teachers in the writing of materials for CRIB Project as an avenue of their professional development activity	_____	_____	_____	_____
2. Encouraging the Project Director in utilizing the CRIB Project as an avenue of professional development activity	_____	_____	_____	_____
3. Cooperating with other directors to coordinate on-going efforts to increase the value of CRIB Project to its users.	_____	_____	_____	_____
4. Facilitating the inservice sessions which are necessary to CRIB Project	_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

LOWEST

- III. Free Response:

- Validity (or appropriateness) of your role items as expressed above:
- Conditions required which are presently available and are necessary for role attainment:
- Conditions required which are presently not available that would be necessary for role attainment:

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Director of Research.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
I have been and/or am:				
1. In conjunction with other administrators (e.g. science supervisor) opening lines of communication go my counterparts in other school systems with a view to the ultimate coordination of banks similar to those of CRIB Project which might be developed in these systems.	_____	_____	_____	_____
2. Applying for external funding for the Project if that is desired.	_____	_____	_____	_____
3. Alert for opportunities to extend a fully developed and evaluated CRIB concept into other suitable areas and grade levels	_____	_____	_____	_____
4. Ensuring that adequate project management and control is carried out by CRIB Project Director as long as CRIB Project receives research funds	_____	_____	_____	_____
5. Ensuring that the Project evaluation results are reported to system personnel and personnel in other school systems	_____	_____	_____	_____
6. Strongly supporting CRIB Project applications for a reasonable share of financial and logistic support	_____	_____	_____	_____
7. Assisting in the development and conducting of the evaluation design for the project.	_____	_____	_____	_____
8. Maintaining awareness of the operation and impact of CRIB Project at the classroom level	_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

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LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Director of Evaluation.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
I have been and/or am:				
1. Assisting in the development and conducting of the evaluation design for the Project	_____	_____	_____	_____
2. Making available results of evaluation studies of CRIB Project to system personnel and personnel in other school systems	_____	_____	_____	_____
3. Initiating, and in conjunction with the Directors of Pupil Assessment, Curriculum Supervision, and Research, and the Supervisor of Science and Health, conducting the continued assessment of the impact of CRIB Project on student learning	_____	_____	_____	_____
4. In conjunction with the Project Director monitoring the concurrence of the implementation model of CRIB Project with what is actually taking place so that corrections may be made in either the model or the working of the project	_____	_____	_____	_____
5. Collaborating with the Project Director to collect and collate data from principals, curricular associates, users of CRIB Project, and any other sources deemed necessary so that a current and comprehensive picture of CRIB Project is available	_____	_____	_____	_____
6. Assisting in the assessment of the effect of CRIB Project on the professional development of science teachers	_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

--	--	--	--	--	--

LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Directorate of Information Systems.

			Not At
<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>All</u>

I have been and/or am:

- | | | | | |
|--|-------|-------|-------|-------|
| 1. Assisting in the development of the computer assisted instruction (C.A.I.) potential of the CRIB materials | _____ | _____ | _____ | _____ |
| 2. Preparing, in conjunction with the Director of CRIB Project and the Director of Student Accounting and School Information, etc., the specifications of a computer system which would be sufficiently flexible to handle CRIB Project management over and above other projected needs of the EPSB System | _____ | _____ | _____ | _____ |
| 3. Preparing an estimate of the initial cost of transferring CRIB Project materials to a computer system and the subsequent costs of maintaining them | _____ | _____ | _____ | _____ |
| 4. Aware of the further curricular needs of the schools such as those posed by CRIB Project when a computer network with terminals in the schools is being designed | _____ | _____ | _____ | _____ |
| 5. Maintaining and making available on request computerized information concerning the extent of use of items in the bank. | _____ | _____ | _____ | _____ |
| 6. Understanding the necessity of ultimately transferring the materials in and the management of the banks to a computer facility. | _____ | _____ | _____ | _____ |
| 7. Collaborating with other Directors and Supervisors to facilitate the evaluation of CRIB Project | _____ | _____ | _____ | _____ |

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

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LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

I.
Rate with a check (✓) the level of attention given by you to the following role items for Director of Pupil Assessment.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
I have been and/or am:				
1. Directly and continuously involved in development and modification of assessment materials in CRIB Project Banks	_____	_____	_____	_____
2. Cooperating in the design and implementation of a study to assess the contribution of CRIB Project to student progress	_____	_____	_____	_____
3. Assessing in conjunction with the other Directors and Supervisors, the progress of junior high school students in their learning of science	_____	_____	_____	_____

II.

Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

LOWEST

III.

Free Response:

- Validity (or appropriateness) of your role items as expressed above:
- Conditions required which are presently available and are necessary for role attainment:
- Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Supervisor of Science and Health.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
I have been and/or am:				
1. Ensuring, through the Project Director, that the objectives of the Project and materials in the banks are continually revised and expanded	_____	_____	_____	_____
2. In conjunction with the Director of Evaluation conducting the continued assessment of the impact of CRIB Project on student learning	_____	_____	_____	_____
3. Encouraging the curricular associates and the consultants to promote among teachers increasing and more efficient use of the banks	_____	_____	_____	_____
4. Bringing to the attention of the Project staff new science materials	_____	_____	_____	_____
5. Exercising my responsibilities to ensure the appointment of high-calibre Project personnel	_____	_____	_____	_____
6. Cooperating with the Director of Research and the Director of CRIB Project in contacting other systems for the initiation of CRIB-type Projects on science on a consortium basis	_____	_____	_____	_____
7. Undertaking the integration of CRIB Project with other science programs operating in the system	_____	_____	_____	_____
8. Organizing in conjunction with the Project Director meetings of teachers and curricular associates during the school year to exchange ideas on the use of the banks and promote liason between teachers and the rest of CRIB Project Staff	_____	_____	_____	_____
9. A source of ideas and new directions for CRIB Project	_____	_____	_____	_____
10. Preparing in conjunction with Director of CRIB Project budgets for the Project	_____	_____	_____	_____
11. Functioning as a mediator between other facilitators and the Director of CRIB Project and staff	_____	_____	_____	_____

II.

Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

LOWEST

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III.

Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Personnel in the Instructional Media Center.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
I have been and/or am:				
1. Informing the Director of CRIB Project if any materials which are referenced in the banks become unavailable	_____	_____	_____	_____
2. Informing the Director of CRIB Project of additions of such material to the catalogues of the centre	_____	_____	_____	_____
3. Informing the Director of CRIB Project of new releases of materials suitable for CRIB Project that could be obtained for the centre	_____	_____	_____	_____
4. Aware of the kinds of A V material that are especially pertinent to the needs of CRIB Project	_____	_____	_____	_____
5. Cooperating with the Directorate of Information Systems and other Directors to ensure that the computerized information of the centre and the computer-managed operations of CRIB Project are compatible	_____	_____	_____	_____
6. Aware of the materials which are used in the audio-visual sub-banks of the Project	_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

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LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Personnel in the EPSB Library System.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
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I have been and/or am:

- | | | | | |
|---|-------|-------|-------|-------|
| 1. Cooperating at the school level in the development of new materials for the banks | _____ | _____ | _____ | _____ |
| 2. Working with the Directorate of Information Systems and other Directors to ensure that the computerized information of the libraries and the computer-managed operations of CRIB Project are compatible | _____ | _____ | _____ | _____ |
| 3. Aware of the materials in our catalogues which are mentioned in the CRIB Project banks | _____ | _____ | _____ | _____ |
| 4. Informing the Director of CRIB Project if any materials which are referenced in the bank items become unavailable or superseded by later editions | _____ | _____ | _____ | _____ |
| 5. Informing the Director of CRIB Project of additions of pertinent materials to the catalogues of the services | _____ | _____ | _____ | _____ |
| 6. Aware of the kinds of library materials which are especially pertinent to the needs of CRIB Project | _____ | _____ | _____ | _____ |
| 7. Cooperating with the Supervisor of Science and Health, Director of CRIB Project, Curricular Associates, and science teachers to ensure that the reference materials mentioned in the banks are available in central and school libraries | _____ | _____ | _____ | _____ |
| 8. Informing the Director of CRIB Project of information on new releases of materials suitable for CRIB Project that could be obtained for the libraries | _____ | _____ | _____ | _____ |

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

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LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

I.

Rate with a check (✓) the level of attention given by you to the following role items for Specialists and Consultants in Reading and Mathematics.

High	Medium	Low	Not at <u>All</u>
_____	_____	_____	_____

I have been and/or am:

1. Cooperating with CRIB Project staff to ensure that CRIB materials are of the appropriate level for their intended use

2. Cooperating with CRIB Project staff in conducting in-service sessions for CRIB writers to ensure that the materials they produce are of the appropriate level for their intended use

II.

Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes:

HIGHEST

LOWEST

III.

Free Response:

a. Validity (or appropriateness) of your role items as expressed above:

b. Conditions required which are presently available and are necessary for role attainment:

c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for the Administrative Staff of the Schools.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
I have been and/or am:				
1. Sufficiently familiar with the rationale of the Project to understand how it resembles and differs from other curricular innovations.	_____	_____	_____	_____
2. Understanding that the rationale of the Project encourages teachers to participate in group writing sessions to enrich their professional abilities and attitudes.	_____	_____	_____	_____
3. Bringing CRIB Project to the attention of my science teachers.	_____	_____	_____	_____
4. Influencing the adoption of innovations such as CRIB Project by the teachers in my school.	_____	_____	_____	_____
5. Understanding that use of CRIB Project materials by a teacher can lead to a more efficient and productive use of the teacher's time	_____	_____	_____	_____
6. Encouraging in cooperation with the Project staff, non-users of CRIB Project banks to consider becoming users and full participants in the project.	_____	_____	_____	_____
7. Cooperating in the provisions of release time for teachers who require it for participation in group writing sessions.	_____	_____	_____	_____
8. Aware of the existence of CRIB Project.	_____	_____	_____	_____
9. Aware that participation in the group activities of the Project may require release time for the teachers concerned.	_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

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LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for teachers.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
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I have been and/or am:

- | | | | | |
|---|-------|-------|-------|-------|
| 1. Making use of the banks by drawing upon bank materials to help in the teaching and evaluation of my courses. | _____ | _____ | _____ | _____ |
| 2. Making use of the banks by using the banks as a source of enrichment material for individual students who have that need. | _____ | _____ | _____ | _____ |
| 3. Contributing materials to the banks by notifying the Project Director of new ideas for CRIB items, either in the form of extensions of or modifications to existing materials, or of completely new content areas. | _____ | _____ | _____ | _____ |
| 4. Contributing materials to the bank by participating during the term and in summer writing sessions where new materials for the banks are prepared. | _____ | _____ | _____ | _____ |
| 5. Providing feedback on the banks by attending meetings designed to exchange ideas on the use of the banks and to promote liason between teachers and the rest of CRIB Project staff | _____ | _____ | _____ | _____ |
| 6. Providing feedback on the banks by keeping and making available to the Project Director a cumulative record of which bank materials I have used. | _____ | _____ | _____ | _____ |
| 7. Providing feedback on the banks by alerting the Project Director to any errors, omissions, impracticalities or redundancies in the materials of the banks. | _____ | _____ | _____ | _____ |
| 8. Making CRIB Project known to "outsiders" (e.g. parents, student teachers, etc.) | _____ | _____ | _____ | _____ |

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those you have rated 'not at all' in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

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LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

I. Rate with a check (✓) the level of attention given by you to the following role items for Director of CRIB Project:

	High	Medium	Low	Not at All
I have been and/or am:				
1. Communicating the nature and operation of CRIB Project by attending to the publication in learned journals and other suitable places of appropriate aspects of CRIB Project.	_____	_____	_____	_____
2. Administering the operation of the Project by cooperating with the Directorate of Information Systems and others in the preparation of the specifications of a computer system which would be sufficiently flexible to handle CRIB Project management over and above other projected needs of EPSB system.	_____	_____	_____	_____
3. Directing the revision and amplification of the banks by organizing and operating the writing sessions which take place out of school hours by teachers, curricular associates, curriculum specialists, reading specialists, scientists and others.	_____	_____	_____	_____
4. Communicating the nature and operation of CRIB Project by meeting with administrators in the schools to explain the current purpose and scope of CRIB Project.	_____	_____	_____	_____
5. Communicating the nature and operation of CRIB Project by working with Supervisor of Science and Health to explain the purpose and scope of CRIB Project to administrators in Central Office and to solicit their support in the promotion of the activities of the Project	_____	_____	_____	_____
6. Directing the revision and amplification of the banks by continually revising and expanding the objectives of the Project and the materials in the banks.				
7. Directing the revision and amplification of the banks by receiving, collating and ensuring the incorporation of applicable information for I.M.C. concerning new developments in audio-visual material availability.	_____	_____	_____	_____

- | | | | | | |
|-----|--|-------|-------|-------|-------|
| 8. | Administering the operation of the Project by having an accurate and detailed picture of how CRIB Project operates. | _____ | _____ | _____ | _____ |
| 9. | Directing the revision and amplification of the banks by receiving, collating and ensuring the incorporation of applicable information from the library services on the new developments in library material availability. | _____ | _____ | _____ | _____ |
| 10. | Administering the operation of the Project by establishing lines of communication with the appropriate authority in Central Office to whom CRIB Project is accountable so that Central Office decision-making shall be expedited. | _____ | _____ | _____ | _____ |
| 11. | Administering the operation of the Project by initiating and coordinating periodic reviews of the objectives and rationale of CRIB Project. | _____ | _____ | _____ | _____ |
| 12. | Promoting the wider and more effective use of the banks by organizing in conjunction with the Supervisor of Science and Health meetings of teachers and curricular associates during the school year to exchange ideas on the use of the banks and promote liason between teachers and the rest of CRIB Project staff. | _____ | _____ | _____ | _____ |
| 13. | Promoting the wider and more effective use of the banks by soliciting the support of school administrators for the activities associated with CRIB Project. | _____ | _____ | _____ | _____ |
| 14. | Communicating the nature and operation of CRIB Project by informing library services and I.M.C. of any new resource requirements of CRIB Project. | _____ | _____ | _____ | _____ |
| 15. | Directing the revision and amplification of the banks by receiving and supervising the collation of the feedback from the teachers and curricular associates concerning the material in the banks. | _____ | _____ | _____ | _____ |
| 16. | Communicating the nature and operation of CRIB Project by attending, when invited, professional development sessions in other school systems to talk about CRIB Project. | _____ | _____ | _____ | _____ |

17. Contributing towards the evaluation of CRIB Project by making periodic visits to the classroom to study CRIB Project in action.

18. Contributing towards the evaluation of CRIB Project by assisting the Director of Evaluation to monitor the concurrence of the implementation model of CRIB Project with what is actually taking place so that corrections may be made in either the model or the working of the project.

19. Promoting the wider and more effective use of the banks by conducting in conjunction with other Project staff in-service meetings with teachers in the schools who are non-users.

20. Contributing towards the evaluation of CRIB Project by assisting the Director of Evaluation in the assessment of the effect of CRIB Project on the professional development of science teachers.

21. Directing the revision and amplification of the banks by deciding, in consultation with Project staff and users, in which areas and in which direction CRIB Project materials should be updated, upgraded and expanded.

II. Rank the role items in the order of relative importance for your position assuming that CRIB Project has been fully implemented. Because of the large number of role items, please proceed in two stages. REMEMBER! Please rank all items even those you have rated "not at all" in Response I.

Stage 1. Please assign the role items without regard to order of importance to one of the three categories below. Try and arrange to have similar numbers of role items in each category.

A. Role items very important to my position in a fully implemented CRIB Project:

B. Role items quite important to my position in a fully implemented CRIB Project:

C. Role items less important to my position in a fully implemented CRIB Project:

Stage 2: Now please rank the role items within each category from HIGHEST to LOWEST. Answer by entering the numbers of the role items in the boxes:

Category A: HIGHEST LOWEST

Category B: HIGHEST LOWEST

Category C: HIGHEST LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

QUESTIONNAIRE TO ASSIST THE FURTHER IMPLEMENTATION OF CRIB PROJECT

- I. Rate with a check (✓) the level of attention given by you to the following role items for Curricular Associates.

	<u>High</u>	<u>Medium</u>	<u>Low</u>	<u>Not At All</u>
I have been and/or am:				
1. Serving as liason between the Project Director and the teacher by acting as a channel to the Director for teacher suggestions and ideas.	_____	_____	_____	_____
2. Participating in the revision and expansion of the banks by cooperating in the evaluation of CRIB materials and their effectiveness on student learning.	_____	_____	_____	_____
3. Participating in the revision and expansion of the banks by participating in writing sessions outside school hours.	_____	_____	_____	_____
4. Serving as an advisor and trouble-shooter in the operation of CRIB Project by being adept in using the banks and being aware of their versatility.	_____	_____	_____	_____
5. Serving as an advisor and trouble-shooter in the operation of CRIB Project by participating in meetings during the school year of teachers for the purpose of promoting more effective use of the banks.	_____	_____	_____	_____
6. Serving as liason between the Project Director and the teachers by notifying the Director of any difficulties which I encounter among teachers	_____	_____	_____	_____
7. Serving as an advisor and trouble-shooter in the operation of CRIB Project by assisting teachers having difficulty with either the physical or conceptual aspects of the bank operation.	_____	_____	_____	_____
8. Participating in the revision and expansion of the banks by field testing new materials.	_____	_____	_____	_____

- II. Rank the roles in the order of relative importance for your position assuming that CRIB Project has been fully implemented. REMEMBER! Please rank all items even those which you have rated "not at all" in Response I. Answer by entering the numbers of the role items in the boxes.

HIGHEST

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LOWEST

III. Free Response:

- a. Validity (or appropriateness) of your role items as expressed above:

- b. Conditions required which are presently available and are necessary for role attainment:

- c. Conditions required which are presently not available that would be necessary for role attainment:

THANK YOU VERY MUCH!

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